# MISSOURI PUBLIC SERVICE COMMISSION

# STAFF REPORT

# COST OF SERVICE

## MISSOURI-AMERICAN WATER COMPANY

**CASE NO. WR-2017-0285**

***Jefferson City, Missouri***
***November 30, 2017***

** Denotes Confidential Information **

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# MISSOURI-AMERICAN WATER COMPANY
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## I. Executive Summary

Staff conducted a review in Case No. WR-2017-0285 of all cost of service components (capital structure and rate of return, rate base, depreciation expense, operating revenues, and expenses) which comprise Missouri-American Water Company's (MAWC) Missouri jurisdictional revenue requirement. This audit was in response to MAWC's filing made on June 30, 3017, applying a future test year, and seeking to increase its annual base rate revenues by $74,674,745, which is about a 25.4% increase in rate revenues. Currently, MAWC has a pending ISRS filing that the Commission will decide after this testimony is filed. The case number for that proceeding is WO-2018-0059.

MAWC's proposed future test year means that historic data is escalated using projected levels of investment, expenses, and revenues. Those projections are reflected in the overall cost of service calculation of $74,674,745 proposed by MAWC in this rate case, including investment associated with ISRS. When MAWC's future test year escalations for ISRS are removed, MAWC is requesting a combined water and sewer rate revenue increase of approximately $57,125,669 annually, which is about a 19.4% increase. While MAWC has been ordered to use historic data ending December 31, 2016, and has updated most of the data through June 30, 2017, an apples-to-apples comparison of Staff's modified historic test year revenue requirement recommendation to MAWC's projections is challenging. Such a comparison requires further analysis not present in this Report.

Staff's recommended increase in revenue requirement is based upon an adjusted test year for the twelve months ending December 31, 2016, which includes several updates for changes in major elements of the revenue requirement through June 30, 2017. Staff's recommendation also reflects all ISRS capital investment and related costs that MAWC might be authorized to recover through its currently proposed ISRS tariff and will require that MAWC's ISRS rate be set to zero upon the effective date of rates in this case in the event the Commission approves MAWC's ISRS request. Staff's recommended revenue requirement for MAWC is $18,724,348 at Staff's recommended return on equity (ROE) recommendation

of 9.25%. Staff's recommendation includes an estimated true-up allowance of $17,147,016. Including the true-up allowance, Staff's recommendation is comprised of a revenue requirement for all MAWC water operations of $17,848,448 and for all sewer operations of $875,900.

The impact of Staff's recommended revenue requirement for each retail rate customer class will be proposed in the Staff's rate design testimony that is to be filed on December 13, 2017.

*Staff Expert/Witness: James A. Busch*

## II. Background of Missouri-American Water Company

### A. Introduction

MAWC is a wholly owned subsidiary of American Water Works Company, Inc. ("AWC"), which is the largest investor-owned U.S. water and wastewater utility company. AWC is headquartered in Voorhees, New Jersey and provides a variety of services to approximately 15 million people in over 47 states and parts of Canada. As part of this overall umbrella of services, AWC provides water and sewer service in 16 states that are subject to regulation by state public utility commissions. AWC also controls American Water Works Service Company, Inc. ("Service Company") which provides consolidated and centralized functions for AWC owned subsidiaries.

### B. Mergers and Acquisitions

As of June 30, 2017, MAWC provided water service to approximately 464,187 customers and sewer service to approximately 12,844 customers. MAWC is a Missouri corporation providing water service primarily in and around the cities and villages of Branson, Brunswick, Hollister, Houston Lake, Jefferson City, Joplin, Loma Linda, Mexico, Parkville, Platte Woods, Riverside, Reeds Spring, Sedalia, St. Charles, St. Joseph, St. Louis metropolitan area, Warrensburg, Warsaw and other outlying areas in the following Missouri Counties: Barry County, Greene County, Platte County, Warren County, and Taney County Missouri. MAWC also primarily provides sewer service in and around the cities of Arnold, Branson, Cedar Hill, Gravois Mills, Jefferson City, Laurie, Parkville, Reed Springs, Sedalia, and Warsaw, and in the following Missouri Counties: Cole County, Callaway County, Camden County, Morgan County, Taney County and Warren County.

Since the time of MAWC's last rate case, Case No. WR-2015-0301, MAWC has acquired several smaller water and wastewater systems. The following chart summarizes the systems that MAWC has acquired since the time of its last rate case:

| System Name | Water\ Sewer | Location | Case No. | Date Approved By Commission |
|---|---|---|---|---|
| Jaxson Estates Water | Water | St. Charles Co. | WA-2016-0054 | January 15, 2016 |
| Benton County Sewer | Sewer | Benton Co. | SA-2015-0065 | December 12, 2015 |
| Woodland Manor | Water | Stone Co. | WM-2016-0069 | May 14, 2016 |
| Jaxson Estates Sewer | Sewer | St. Charles Co. | SM-2017-0069 | January 10, 2017 |
| Village of Wardsville | Water & Sewer | Cole Co. | WA-2017-0181 & SA-2017-0182 | May 13, 2017 |

MAWC has also acquired or is the process of acquiring the following systems, but these are not in the current rate case.

| System Name | Water\ Sewer | Location | Case No. |
|---|---|---|---|
| Pevely Farms | Water & Sewer | St. Louis Co. | WA-2017-0278 & SA-2017-0279 |
| Spokane Highlands | Water | Taney Co. | WM-2018-0104 |
| Homestead Estates | Sewer | St. Louis Co. | SA-2018-0019 |
| Radcliffe Place | Sewer | St. Louis Co. | SA-2018-0068 |

### C. MAWC Previous Rate Increase

MAWC last sought to change its water and sewer rates in Case No. WR-2015-0301. In its *Order Approving Non-Unanimous Stipulation and Agreement* issued in that case, the Commission approved an agreement that granted MAWC a total increase in rates of approximately $30,413,000. MAWC received a $28,852,059 annual increase in water revenues and a $1,560,941 annual increase in sewer revenues.

*Staff Expert/Witness: James A. Busch*

## III. Test Year and True-Up Recommendation

In this proceeding, MAWC is proposing a future test year. On June 30, 2017, MAWC filed a *Motion to Establish Future Test Year* (*Future Test Year Motion*). After hearing

argument on the *Future Test Year Motion*, on August 9, 2017, the Commission issued its *Order Regarding Test Year*, and ordered the following:

> 1. The parties shall use a test year of the 12 months ending December 2016, with an update period of the six months ending June 2017, and a true-up period of the six months ending December 2017.
>
> 2. All parties shall use actual historic financial data for Missouri-American Water Company to present their positions based upon the periods set in Ordered Paragraph 1.
>
> 3. Parties may present further adjustments for the Commission's consideration based upon projected or forecasted data past December 2017. No party shall be precluded from opposing such adjustments.

As a result, Staff has followed the Commission's Order and used a test year of the twelve months ending December 31, 2016 with a true-up for known and measurable changes through December 31, 2017. At this time, Staff has not chosen to use any further adjustments using projected or forecasted data past December 2017 to the test year.

*Staff Expert/Witness: James A. Busch*

### A. Analysis of Historic Test Year vs Future Test Year Ratemaking Approaches

In this proceeding, MAWC has proposed that its rates be set using what it terms as a "future test year." If adopted by the Commission, use of this approach would be a significant change to how utility rates have been established in Missouri for many decades.

In Missouri, utility rates have traditionally been set using a "historic test year" approach. Under this method, rate analysis begins with selection of a test year consisting of twelve months of actual financial information, and for which the data is available for review and analysis at the beginning of the rate case audit. During this audit, the test year data is reviewed to determine what adjustments should be proposed in order to convert the historical financial data into representative ongoing expense and revenue levels to include in prospective rate levels. In every rate case, a number of "annualization" and "normalization" adjustments are proposed for this purpose. Annualization adjustments are proposed to reflect the most current trends evident for an individual expense or revenue item in setting utility rates. Normalization adjustments are proposed to eliminate abnormally high or low individual

revenue and expense amounts incurred within the test year in order to reflect only normal and ongoing levels of costs in setting prospective utility rates.

Historic test year ratemaking is not limited to reliance on information contained within the twelve month test year selected for the case. In all major cases, financial information from a subsequent "test year update period" is used and, in almost all cases, an even later "true-up" period is authorized as well to allow use of the most updated expense, revenue and rate base data possible in setting utility rates. Under Missouri's historic test year approach, rate base items are generally set equal to the update period or true-up period ending level, again to reflect that the most current information available is utilized to set customer rates while ensuring that actual expenditures made were prudently incurred and in-service.

To summarize, use of a historic test year approach in Missouri has included a number of features intended to reasonably ensure that utility rates are set to reflect the most current trends in the company's revenue, expense and capital results. However, in almost all cases, ratemaking allowances have been restricted to those qualifying under the "known and measurable" cost standard. The "known and measurable" standard requires that only the costs associated with events have actually occurred, and for which the financial impact can be accurately quantified, should be reflected in utility rates. If adhered to, the known and measurable standard precludes the use of budgeted, projected or forecasted information in setting utility rates.

Under a "future test year" ratemaking approach, the known and measurable standard is jettisoned, and projected information is utilized to set the utility's rates. Adjustments are proposed to the utility's revenue, expense and rate base levels in order to estimate what those values are expected to be in a future period when the company's new rates will be in effect. In most cases, this future period will be the first twelve months new utility rates will be in effect (the "rate period"). Under a future test year approach, revenue and expense levels equal to the level expected to be incurred during the twelve-month rate period are normally assumed for purposes of setting rates. Rate base levels equal to the average values projected during the rate period are normally assumed as well. Forecasted rate of return and capital structure assumptions are also utilized under future test year ratemaking.

The end result of a rate case audit is a revenue requirement recommendation based upon the construction of an expected "revenues/expense/rate base" relationship. For historic

test year ratemaking, the revenues/expense/rate base relationship is based upon *actual* past financial results. For future test year ratemaking, this relationship is constructed using forecasted amounts. Under either approach, material deviations in individual financial items between actual costs incurred and amounts assumed for ratemaking purposes will not necessarily mean that customer rate levels are either deficient or excessive as there may be offsetting changes in other items. It is only when the overall revenue/expense/rate base relationship previously used to set rates is no longer reflective of actual utility financial performance that a change in rates may be warranted, either upward or downward.

Helpful background information concerning future test year issues can be found in two reports issued by the National Regulatory Research Institute (NRRI) in recent years. Both reports were attached to filings made by parties to this proceeding earlier this year. Staff views the reports as overall being neutral toward the concept of use of future test years for utility ratemaking. The first report, *Future Test Years: Challenges Posed for State Utility Commissions* (July 2013),[1] provides an overview of the policy implications of use of future test years and makes clear the author's belief that the choice between use of historic and future test year approaches requires a number of trade-offs, with neither option being clearly optimal under all circumstances. The second report, *Future Test Years: Evidence from State Utility Commissions* (October 2013),[2] is largely concerned with discussion of the responses to a NRRI survey by those public utility commissions currently utilizing a future test year. The survey respondents indicated general support for continued use of this approach to setting rates in their jurisdictions.

The content of the two NRRI reports support Staff's belief that any transition to use of future test years in Missouri will require a significant refocusing of rate case audit efforts, not only by the parties to the case, but also by the Commission in its review of evidence. Instead of an emphasis on detecting trends and abnormalities in historic financial data, the new focus would be on the need to assess the reasonableness of the assumptions underlying the forecasts

[1] Attached to "Response to Motion to Establish Future Test Year and Test Year Recommendation," Midwest Energy Consumers Group, et al; July 27, 2017.

[2] Attached to "MAWC Reply to Responses Concerning Motion to Establish Future Test Year," Missouri-American Water Company, August 2, 2017.

relied upon by utilities.[3] Consequently, in determining just and reasonable rates, the Commission would be placed in a position of deciding the reasonableness of those same assumptions underlying the financial predictions. As such, use of future test years will require greater expertise on Staff's part regarding analysis and critiques of utility budgeting practices and forecasting techniques than it currently possesses. For this reason, additional Staff training will be necessary if use of future test years is implemented in this jurisdiction. However, even with enhanced training, Staff cautions that it will take time and effort to gain expertise in future test year ratemaking commensurate with its current experience with historic test year ratemaking.

The most frequently observed argument for adoption of future test years is the belief that this method more directly matches the financial values used in ratemaking to the time period in which rates will be in effect than the historic test year method does. A related contention in support of future test years is that, in an increasing cost environment, use of historic ratemaking approaches will not allow utilities a reasonable opportunity to earn their authorized rates of return.

However, there are at least two major disadvantages in using future test year approaches to set rates, in Staff's view. The first is that use of speculative data is inherently a less reliable foundation for ratemaking than reliance on known and measurable information. This concern is increased by the incentive by the utility to, consciously or unconsciously, overstate its cost of service estimations, in order to achieve higher rates and earnings levels. The second major disadvantage of future test years compared to historic test years is that the incentives for a utility to minimize increases in its cost of service over time will inherently be less when forecasts of an increasing cost of service are used to set rates in comparison to the situation in which the historical known and measureable standard is adhered. Moreover, the legal prohibition against retroactive ratemaking amplifies these disadvantages of a future test year, as once an over-estimated rate goes into effect, there is no recourse for the ratepayer.

[3] It should be noted that some analysis of historical financial information of utilities will still be required by Staff and other parties even under a future test year approach, as it is likely that annualization and normalization adjustments will still be applied to the current historical level of many expenses prior to further adjusting the costs out to projected levels for the rate period.

The Commission's directive to set just and reasonable rates must be "fair to both the utility and its customers."[4] As acknowledged in Missouri case law:

> [A] just and reasonable rates is a bilateral proposition. Like a coin, it has two sides. On the one side it must be just and reasonable from the standpoint of the utility. On the other side it must be just and reasonable from the standpoint of the utility's customers. This bilateral aspect of utility rate making, although susceptible of easy expression in theory, is considerably more difficult to achieve.[5]

Achieving that balance is made all the more challenging for the Commission when the nature of the evaluation is fundamentally altered in favor of a ratemaking process that values estimates and speculation over quantifiable, verifiable data.

Staff is not persuaded at this time that a future test year ratemaking approach is superior to continued use of historical test year ratemaking. Staff asserts that historical ratemaking has in the past and can continue to provide an appropriate baseline for setting reasonable ongoing rate levels in Missouri. A properly adjusted set of historical test year process financial data should provide utilities with a reasonable opportunity to earn their authorized return. Use of historical test years also provide very strong incentives for efficiency and cost control by utility management. Additionally, Staff has not concluded that the revenue/expense/rate base relationship established using future test years will inherently be more accurate than establishing that relationship using historic adjusted financial information. For these reasons, Staff recommends that MAWC's rates continue to be set using a historical test year approach in this proceeding. Specific comments by Staff regarding the details of MAWC's future test year proposal will be found in Staff's rebuttal testimony to be filed later.

In the event that the Commission sees possible merit in use of future test years, either in general or in the specific circumstances of MAWC's current rate increase request, Staff suggests that the following guidelines and policies be considered in conjunction with any consideration of this approach to ratemaking:

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[4] ***St. ex rel. Valley Sewage Co. v. Pub. Serv. Comm'n,*** 515 S.W.2d 845 (Mo. App., K.C.D. 1974).

[5] ***State ex rel. Valley Sewage Co. v. Public Service Commission,*** 515 S.W.2d 845, 850 (Mo. App. 1974).

*Use of Inflation Factors.*

Staff sees very little justification for use of general inflation factors to escalate the level of individual utility expenses above historic levels. First, reference to broad inflation factors that are not tied to the specific conditions under which utilities in general operate would not seem to provide persuasive evidence as to the likely trend over time in incurred utility expense levels. Second, application of these factors for purposes of setting rates would implicitly take the position that utility costs should be considered to be subject to general inflation impacts, without any specific offset for the possibility of productivity or efficiency improvements on the utility's part that would offset the impact of general inflation, at least in part. Such a position may not consider "all relevant factors" in setting rates, as is required by Missouri courts.[6]

Staff's position is that, if future test years are used, proposed increases to historical expense levels should be justified by a specific and detailed analysis on an individual expense level. Use of inflation/escalation factors for this purpose should not be accepted. More broadly, Staff would encourage the Commission not to necessarily view potential use of future test years as an "all or nothing" proposition. If forecasting of cost of service values is to be allowed in ratemaking, the utility should shoulder the clear burden of demonstrating that use of projected values for any individual item of revenues, expense, or rate base is justified by substantial evidence that movement beyond historic values is appropriate. If such evidence is not provided by the utility, then the value in question should be left at historical levels for ratemaking purposes.

*Imputation of Productivity Improvements.*

It should be expected that utilities achieve and demonstrate greater productivity over time. Sometimes, these improvements in productivity are brought about by upfront investments in labor and capital. Appropriate treatment of the cost of investments made to enhance utility productivity and their resulting savings in traditional rate cases in Missouri ensures that customers both pay the costs of and receive the benefits of these initiatives in the rates charged. However, in a future test year scenario, the risk is that the utilities will take

[6] ***State ex rel. Missouri Water Co. v. Public Service Commission,*** 308 S.W.2d 704, 719 (Mo. 1957).

greater care to forecast increased capital and labor costs associated with improved operations than any related and offsetting productivity benefits.

To guard against this possibility, Staff recommends that the Commission require utilities seeking future test years to demonstrate how their projected adjustments in total reasonably impute a level of increasing productivity and efficiency in their operations for the ongoing benefit of customers and to offset projected cost of service increases. If use of inflation/escalation factors are allowed in future test year ratemaking, the utilities should be required to propose a reasonable productivity offset to these factors for purposes of setting rates.

*Used and Useful Status.*

By Missouri statute electric utilities are not allowed to include the costs of construction projects in rate base until such projects are "used and useful" from a current customer perspective; i.e., that the projects are "in-service." While not statutorily required for natural gas, water, and sewer utilities, the Commission has in all or almost all instances over many years applied the same principle in setting rates for non-electric utilities.

Any broad movement toward use of future test years in this jurisdiction will require abandonment of a strict used and useful ratemaking standard for non-electric utility plant in service additions. If use of the future test year approach is authorized by the Commission in the future, Staff recommends that the affected utilities be required to submit a reconciliation of the projected plant addition costs reflected in the utility's rates to the cost of actual "used and useful" plant additions made during the rate period. If the reconciliation shows that construction project costs included in customer rates as part of a future test year were not actually placed in service in the timeframe assumed by the utility, then the costs associated with all projects not achieving used and useful status on a timely basis should be refunded to customers with interest. The mechanics of such a reconciliation mechanism would need to be considered in more detail if forecasted plant additions are allowed in Missouri ratemaking in the future for non-electric utilities.

*Rate variance analyses.*

If use of future test years is allowed by the Commission at some future point, the utilities using this technique should be required to produce on a quarterly calendar basis an

analysis of the differences between their actual incurred cost of service, and the projected cost of service used in setting customer rates. Along with this quantification, the utilities should provide explanations for any material variances in the two cost quantifications on an individual cost of service item basis.

*Conclusion.*

While appropriate and judicious application the above considerations above would better support the possibility that the use of a future test year could result in balanced ratemaking and, therefore, just and reasonable rates; there is, in *this* case, no basis to adopt a future test year, and the Commission should therefore continue the use of the historic test year.

*Staff Expert/Witness: Mark L. Oligschlaeger*

### B. True-Up

The test year represents the starting point for determining a utility's existing annual revenues, operating costs and net operating income. Adjustments are made to the test year results when the unadjusted amounts do not fairly represent a utility's most current, ongoing and appropriate annual level of revenues and operating costs. The purpose of a true-up is to establish a cut-off point to which major elements of a utility's revenue requirement are to be updated, beyond the test year. When ordered, true-ups involve the filing of additional sets of testimony and the scheduling of additional evidentiary hearings ordered by the Commission. Staff expects to consider actual changes for certain significant items during its true-up audit. The following list are the items that Staff proposes to update as part of its true-up audit:

**Rate Base**

Plant-in-Service

Depreciation Reserve

Contributions in Aid of Construction (CIAC)

CIAC Reserve

Accumulated Deferred Income Taxes

Customer Advances

Materials and Supplies

Prepayments

Discontinuance of Tank Painting Tracker - Inclusion of Remaining Unamortized Balance

Pension Tracker Balance

OPEB Tracker Balance

Other Deferred Regulatory Assets and Liabilities

Rate Base for Newly Acquired Systems

Cash Working Capital

**Cost of Capital**[7]

Capital Structure

Cost of Debt

Cost of Preferred Stock

**Revenues and Expenses**

Customer and meter counts

Chemical Expense

Purchased Water Expense

Waste Disposal

Support Services

Transportation Fuel and Maintenance

Payroll & Benefits

Rate Case Expense

Uncollectibles Expense

Depreciation and Amortization

Tank Painting Expense

Pension and OPEB Expense

Injuries and Damages

Property Tax Expense

Revenues and Expense for Newly Acquired Systems

Income Taxes

As the part of the procedural schedule approved by this Commission in its *Order Scheduling Evidentiary Hearing and Setting Procedural Schedule* issued on September 9, 2017, MAWC

[7] Data will be provided through December 31, 2017.

is required to provide all of this true-up information to the parties of this rate case by January 31, 2018.

*Staff Expert/Witness: James A. Busch*

## IV. Major Issues

The following are the major issues that exist between Staff and the MAWC as a result of their respective direct filings.

**Return on Equity and Capital Structure (ROE)**

Staff has recommended a 9.25 percent ROE. MAWC is recommending a 10.8 percent ROE. In addition, Staff has reflected an AWC parent company capital structure whereas MAWC has proposed a MAWC specific capital structure. The ROE and Capital Structure issues are addressed in detail in Section V of this Report.

**Revenues/Customer Usage**

A sub-issue of revenues and the driver for the difference between MAWC and Staff is the impact of any declining usage on a per customer basis. MAWC states that usage on a per customer basis is declining and that trend will continue into the future. MAWC addresses this theory by calculating a base level of usage based on winter usage or usage in the months of January – March. MAWC performs a regression on this data in which it anticipates that customer usage on a customer basis will be significantly less in the future than today. For the rest of non-base usage, MAWC uses a ten-year average. Staff suggests that usage patterns have changed over the years for various reasons that might cause usage to fluctuate. Thus, Staff recommends using a five-year average of usage to determine the normalized usage amount for the residential class.

**Future Test Year**

As described later in this report, MAWC is proposing a future test year. This test year is determined by first using an historical test year as its starting point. MAWC has proposed that historical period to be twelve months ended December 31, 2016, which is the same period as Staff's test year. Then, MAWC proposes a "link period" which is the timeframe from January 1, 2017 through May 31, 2108. The ending date is the anticipated effective date of new rates based on the revenue requirement approved by the Commission in this proceeding. The third period is the future test year which includes the first twelve months after new rates will be effective, thus the twelve months ended May 31, 2019. Staff is proposing maintaining

the traditional modified test year historically relied upon by this Commission which is an initial test year through December 31, 2016, trued-up through December 31, 2017. See the analysis provided above.

**Revenue Stabilization Mechanism (RSM)**

MAWC is proposing an RSM. Staff considers this issue to be a rate design issue and thus will present its recommendation within its Class Cost of Service Report to be filed on December 13, 2017.

*Staff Expert/Witness: James A. Busch*

# V. Rate of Return

## A. Introduction

Staff's financial analyst, Jeffrey Smith, estimated Missouri-American Water Company's ("MAWC" or "the Company") cost of common equity by applying methodologies consistently used by virtually all cost of capital witnesses that have testified before the Commission. In estimating the cost of common equity, Staff relied on data from a carefully-assembled group of comparable companies in the water utility industry. Staff then compared its cost of equity ("COE") estimate for the water utility industry to the COE estimate for the electric utility industry in the recent Kansas City Power & Light Company ("KCPL") rate case to provide the Commission with a quantitative estimate of a fair and reasonable allowed return on equity ("ROE") for MAWC.[8]

Staff's multi-stage Discounted Cash Flow ("DCF") for the water utility industry analysis shows that the COE, when using an expected long-term nominal growth rate in gross domestic product ("GDP") as the perpetual growth rate for the water utility industry, is approximately 6.78%. Staff estimates that the difference in the cost of equity between the water utility industry and the electric utility industry, as of the end of October 31, 2017, is approximately 25 basis points, based on a range of 0 to 92 basis points. The low end of Staff's range is based on bond yield data and betas[9] which imply little to no difference in the cost of capital. The high end of the range is based on Staff's application of a multi-stage DCF

[8] ***In the matter of Kansas City Power & Light Company***, Case No. ER-2016-0285 **(*Report & Order,*** issued May 3, 2017) at p. 22.

[9] A measure of the sensitivity of a given investment or portfolio to movements in the overall market.

using the expected long-term nominal growth rate in GDP as the perpetual growth rate for both industries.

Staff's observations of the market lead to the conclusion that investors use a lower perpetual growth rate for the electric utility industry as compared to the water utility industry. When a lower perpetual growth rate is used for the electric utility industry as compared to the water utility industry, the implied cost of equity differential is approximately 19 to 60 basis points lower for the water utility industry. Consequently, Staff analysis indicates that an allowed ROE anywhere in the range of 8.5 to 9.5 percent would be fair and reasonable, but that MAWC's allowed ROE should be based on the mid-point of the upper-half of Staff's recommended allowed ROE range because the capital asset pricing model ("CAPM") implies a similar cost of capital for the electric and water industries as compared to DCF indications. Staff's recommended allowed ROE range of 8.50% to 9.50%, with a point estimate of 9.25%, produces a ROR range of 6.53% to 6.97%, with a point estimate of 6.86%, the details of which are shown in the following table:

| | | | Allowed Rate of Return Using Common Equity Return of: | | |
|---|---|---|---|---|---|
| Capital Component | Percentage of Capital | Embedded Cost | 8.50% | **9.25%** | 9.50% |
| Common Stock Equity | 43.99% | | 3.74% | **4.07%** | 4.18% |
| Preferred Stock | 0.09% | 8.67% | 0.01% | **0.01%** | 0.01% |
| Long-Term Debt | 51.02% | 5.35% | 2.73% | **2.73%** | 2.73% |
| Short-Term Debt | 4.91% | .99% | 0.05% | **0.05%** | 0.05% |
| Total | 100% | | 6.53% | **6.86%** | 6.97% |

The details of Staff's analysis and recommendations are presented in Appendix 2, Schedules 1-18. Staff will make any source documents of specific interest available upon the request of any party to this case or upon the Commission's request.

**B. Analytical Parameters**

The determination of a fair rate of return is guided by principles of economic and financial theory and by certain minimum Constitutional standards. Investor-owned public utilities such as MAWC are private property that the state may not confiscate without

appropriate compensation. The United States Supreme Court has described the minimum characteristics of a Constitutionally-acceptable rate of return in two frequently-cited cases:[10] ***Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia***, and ***Federal Power Commission v. Hope Natural Gas Co***.

From these two decisions, Staff derives and applies the following principles to guide it in recommending a fair and reasonable ROR:

1. A fair and reasonable return is consistent with returns realized on other investments of comparable risk;

2. A fair and reasonable return is sufficient to assure confidence in the utility's financial integrity; and

3. A fair and reasonable return allows the utility to attract capital on reasonable terms.

Embodied in these three principles is the economic theory of the opportunity cost of investment. The opportunity cost of investment is the return that investors forego in order to invest in similar risk investment opportunities that vary depending on market and business conditions.

Methodologies of financial analysis have advanced greatly since ***Bluefield*** and ***Hope***, and today's utilities compete for capital in global markets; nonetheless, the parameters defined in ***Bluefield*** and ***Hope*** are readily met using current methods and theory.[11] The principle of commensurate return is based on the concept of risk. The return an investor may expect is reflective of the degree of risk inherent in the investment, risk being a measure of the likelihood that an investment will not perform as expected by that investor. Any line of business carries with it its own risks and it follows, therefore, that the return MAWC's shareholders may expect is equal to that required for comparable-risk utility companies.

Staff estimated the COE for Missouri-American Water using a comparable company approach, with the use of the DCF method and the CAPM. Both the DCF and the CAPM methodologies provide accurate estimates of utilities' cost of equity when reasonable inputs are used. It is well-accepted economic theory that a company that earns its cost of capital will

[10] ***Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia,*** 262 U.S. 679, *43 S.Ct. 675, 67 L.Ed. 1176* (1923); ***Federal Power Commission v. Hope Natural Gas Co.,*** 320 U.S. 591, 64 S.Ct. 281, 88 L.Ed. 333 (1943).

[11] Neither the DCF nor the CAPM methods were in use when those decisions were issued.

be able to attract capital and maintain its financial integrity. The same reasoning holds for the return on equity: authorizing an *allowed* return on common equity based on the *cost* of common equity is consistent with the principles set forth in ***Hope*** and ***Bluefield.*** However, it is common practice for utility regulatory commissions to allow ROEs that are higher than the COE for utilities due to a continued very low cost of capital environment. Consequently, Staff's recommended allowed ROE for Missouri-American Water is higher than Staff's estimate of Missouri-American Water's COE.

### C. Current Economic and Capital Market Conditions

Determining whether a cost of capital estimate is fair and reasonable requires a good understanding of the current economic and capital market conditions, with the former having a significant impact on the latter. With this in mind, Staff emphasizes that an estimate of a utility's COE should pass the "common sense" test when considering the broader current economic and capital market conditions.

The utility industry's cost of capital is heavily influenced by the macroeconomic environment because the price/value of utility securities are highly sensitive to changes in interest rates. For this reason, many equity analysts consider utility stocks as "bond substitutes", because they are yield investments. Therefore, it is important to assess the current economic and capital market condition in order to provide context for the reasonableness of the variables used in estimating the COE. The below information demonstrates why Staff foresees a continued low cost of capital environment of utilities in general, and a slightly lower cost of capital for water utilities as compared to electric utilities. Staff's analysis of the bond markets shows reduced risk premiums between Treasuries and utility bonds, as well as in the different rating categories of utility bonds.

Given that average long-term corporate bond yields have not changed significantly since the fall of 2016, and that both equity and bond risk premiums appear lower, Staff is confident in concluding that both the water and electric utility industries' higher valuation levels now, compared to the fall of 2016, are explained by a lower required return on equity. The proposition that it is reasonable to assume water utility stocks may grow at a rate similar to GDP in perpetuity, while recognizing a perpetual growth rate for electric utility stocks lower than that of water utility stocks, leads to a cost of equity differential of approximately 25 basis points between electric utility stocks and water utility stocks and supports an allowed

ROE in the 9% to 9.25% range for MAWC. Going forward economic conditions signal that interest rates will be moderated by the effects of low inflation in a low growth environment, mitigating chances of significant rate increases and their effects on the COE.

**1. Economic Conditions**

Real GDP growth for 2014, 2015, and 2016 was 2.6%, 2.9%, and 1.5%, respectively. Real GDP increased 3.0% in the third quarter of 2017, after increasing 3.1% and 1.2% in the second and first quarters of 2017, respectively; annualized real GDP growth over the last four-quarters (Q4-2016 – Q3-2017) was 2.28%. Projections for real GDP growth in 2018 are within the range of 1.70% - 2.76%. Longer run projections for real GDP range from 1.80% - 2.54%.

Inflation, measured by the Consumer Price Index ("CPI") for 2014, 2015, and 2016 was 1.63%, 0.13%, and 1.27%, respectively. As of October 2017, annualized year-over-year CPI was 2.00%. Long-term inflation should be expected to be near the Federal Reserve 2% target.[12] The unemployment rate has continued to decline from 6.6% in January 2014 to 4.1% in October 2017.

The Federal Open Market Committee ("FOMC") has initiated four rate increases since it began increasing the FED target funds rate ("funds rate") in December 2015. Increases occurred in December 2015, December 2016, March 2017, and June 2017, taking the upper limit of the funds rate to .50%, .75%, 1.00%, and 1.25%, respectively. Markets anticipate that the FOMC will next raise the funds rate an additional 25 basis points to 1.50% during the FOMC's December 12-13, 2017 meeting. The gradual ratcheting up of short-term rates by the FOMC coinciding with downward pressure on long-term rates has led to a compression in spreads between short and long-term rates.

In December 2015, when the FOMC increased the upper limit of the funds rate from 0.25% to 0.50%, yields on the 10-Year and 30-Year Treasuries were 2.25% and 3.00%, respectively. In June 2017, when the FOMC raised the upper limit of the funds rate from 1.00% to 1.25%, yields on the 10-Year and 30-year Treasuries had come down to 2.21% and 2.79%, respectively. The compression between the funds rate and 10-Year and 30-Year Treasuries is approximately 104 and 121 basis points, respectively; and approximately

[12] Federal Open Market Committee. *Statement on Longer-Run Goals and Monetary Policy Strategy*. January 31, 2017.

17 basis points between the 10-year and 30-year Treasuries. This is known as a "flattening" of the yield curve, indicating a reduction in term premiums.[13] All else being constant, the flattening of the yield curve implies that each increase in the target funds rate leads closer to an inversion of the yield curve,[14] a strong indicator of recessions, suggesting a limit to how far the FOMC can raise rates.[15] Amid low inflation, and facing the possibility of an inverted yield curve and its possible consequences, the FOMC is likely to take a dovish approach to rate increases, meaning lower rates for longer.

An important consideration in assessing the relationship between short-term and long-term Treasury rates is the amount of U.S. Treasuries held by the U.S. Federal Reserve ("FED"). According to the October 26, 2017, FED Balance Sheet, the FED held approximately $2.5 trillion in U.S. Treasury securities, composing approximately 55% of FED assets. This is noteworthy because since the FED began quantitative easing ("QE") in 2009, the organization has continued to reinvest funds from its maturing Treasuries.[16] In October, 2017, the FED initiated balance sheet normalization and began reducing its holding of Treasuries. The path to normalization detailed by the FED will allow $6 billion of Treasury securities and $4 billion of mortgage-backed securities to mature each month, with an increase in the cap each quarter, until its balance sheet is normalized.

A closer look at the FED balance sheet shows that a majority of Treasury securities held by the FED are of shorter duration. The FED's balance sheet shows that approximately $1.5 trillion of the $2.5 trillion in Treasury securities held by the FED mature in 5-years or less. The FED has yet to state what the size or asset allocation of a normalized balance sheet will look like. Considering the composition of the FED's balance sheet prior to QE, the ratio of the FED's three-year average holding of Treasuries to GDP was approximately 4.78%. Currently that ratio stands at 14.47%. If the FED intends to bring its ratio of Treasuries held to GDP close to pre-QE levels it will need to reduce its holdings of Treasuries to near

[13] The term premium measures the extra compensation investors require to hold a long-term government bond instead of buying a sequence of short-term government bonds.

[14] An inversion of the yield curve occurs when short-term interest rates are higher than long-term interest rates.

[15] Consistent with the nature of term premiums, the effect that increases in short-term rates have on long-term rates diminishes the longer the maturity of the investment, effectively a decay of persistence.

[16] The FED conducted three-rounds of quantitative easing from 2009 – 2014 with the intent of increasing the money supply and lowering longer-term interest rates on securities farther out on the yield curve.

$813 billion, given current GDP. The FED will be close to accomplishing this objective once all of its Treasuries of less than 5-years to maturity are retired. This means that the effect of unwinding the balance sheet will be most pronounced on Treasuries with shorter-term maturities.[17] Exercises conducted by economists at the Federal Reserve Bank of Kansas City estimate that if the FED reduced its balance sheet by $675 billion through 2019, term premiums could increase between 25 to 75 basis points by the end of 2019.[18]

A more pressing factor in the paradigm of continued low long-term interest rates, amid increasing short-term rates, is increased international demand for long-term treasuries; economists at the St. Louis Federal Reserve note that "foreigners have increased their holdings of U.S. Treasury securities sixfold, from around $1 trillion in 2000, to more than $6 trillion in 2017."[19] This represents an increase in foreign ownership of Treasuries from 8% of GDP in 2000, to 35% of GDP in 2017. The increase in foreign holdings of U.S. Treasuries is primarily a consequence of the comparably low interest rates offered by other governments; meanwhile, the U.S. has some of the highest yields in the developed world. The result of low yields in other developed markets stems from QE by other central banks. With the Bank of Japan on track to continue its long streak of QE,[20] and the European Central Bank not set to begin tapering its QE program until December 2017,[21] lower international bond rates and the accompanying downward drift to U.S. Treasuries will likely persist.

Other issues that should be considered in assessing the low long-term yields environment include the effects of Dodd-Frank on commercial banks, the increased liquidity of Treasury securities, and the asset allocations of the baby-boomer generation approaching

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[17] Increasing yields on 2-Year and 5-Year notes may incentivize investors holding longer-term notes and bonds to reallocate their holdings more towards instruments with shorter maturities. This could lead to a reduction in the demand of longer-term maturities, resulting in a lower price and an increase yield; this equates to an increase in the term premium required by investors to hold longer-term Treasuries.

[18] David, T., Smith, L., *Forecasting the Stance of Monetary Policy under Balance Sheet Adjustments*. Federal Reserve Bank of Kansas City. May 10, 2017 https://www kansascityfed.org/~/media/files/publicat/research/macrobulletins/mb17davigsmith0510.pdf.

[19] Chien, Y., and Morris, P. *The rising Federal Funds Rate in the Current Low Long-Term Interest Rate Environment*. Economic Research Federal Reserve Bank of ST. Louis. June 30, 2017. https://research.stlouisfed.org/publications/economic-synopses/2017/06/30/the-rising-federal-funds-rate-in-the-current-low-long-term-interest-rate-environment/.

[20] Bank of Japan., *Statement on Monetary Policy*, October 31, 2017, http://www.boj.or.jp/en/announcements/release_2017/k171031a.pdf.

[21] European Central Bank., *Monetary policy decisions,* October 26, 2017, https://www.ecb.europa.eu/press/pr/date/2017/html/ecb.mp171026.en.html.

retirement. For example, since the passage of Dodd-Frank in 2010, commercial banks have "more than doubled their holdings of U.S. Treasuries."[22] Furthermore, economists at the St. Louis Federal Reserve note that, "[g]overnment bonds have become easier to exchange and are a favorite option for corporations wanting to hold liquid assets. In other words, government bonds now resemble cash, which naturally implies low interest rates."[23] Finally, a classic well known investment rule dictates that the closer an individual is to retirement the less risk their portfolio should incur, meaning that their asset allocation should progress to becoming weighted in lower risk assets. Looking at 30-Year Treasury auction allotments by class of investor shows that investment funds have accounted for a growing number of allotments since 2010.[24]

Under the FED's mandate of maximum sustainable employment and price stability, the unemployment rate and inflation rate are important considerations in assessing the funds rate[25] specifically, and longer-term interest rates in general. Similar to the situation with interest rates, where markets have experienced a flattening of the yield curve, U.S. labor markets have experienced a flattening of the Phillips curve.[26] Although unemployment has come down more than 2 percentage points since 2014, inflation has remained subdued. The paradox of subdued inflation accompanying increased employment is more persistent than a cyclical trend, indicating a secular trend. Commentary provided by John Lonski, Chief Economist at Moody's Capital Market Research, Inc. helps highlight this:

> Ordinarily, price inflation accelerates following a decline by the unemployment rate. However, despite a plunge by the unemployment

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[22] Calabria, M., (2016), *Did Dodd-Frank Increase Bank Capital*, Alt-M https://www.alt-m.org/2016/03/18/did-dodd-frank-increase-bank-capital/.

[23] Martin, F., *A Perspective on Nominal Interest Rates*, Federal Reserve Bank of St. Louis, December 12, 2016. https://research.stlouisfed.org/publications/economic-synopses/2016/12/16/a-perspective-on-nominal-interest-rates/.

[24] Arias, M., Restrepo, P., (2019), *Does the Pullback in the Bond Market Matter?,* Federal Reserve Bank of St. Louis, December 2, 2016. https://research.stlouisfed.org/publications/economic-synopses/2016/12/02/does-the-pullback-in-the-bond-market-matter/.

[25] "The federal funds rate is the central interest rate in the U.S. financial market. It influences other interest rates such as the prime rate, which is the rate banks charge their customers with higher credit ratings. Additionally, the federal funds rate indirectly influences longer-term interest rates such as mortgages, loans, and savings, all of which are very important to consumer wealth and confidence." Board of Governors of the Federal Reserve System. *Monetary Policy*. http://wwwfederalreserve.gov/monetarypolicy/default.htm.

[26] The Phillips curve measures the negative relationship between unemployment and inflation; when unemployment goes down, inflation should, in theory, rise.

> rate's moving three-month average from July 2012's 8.2% to July 2017's 4.3%, the average annual rate of core PCE price index inflation also ebbed from 1.9% to 1.5%... Even more striking is the protracted 22-year stay by consumer durable goods price deflation. According to the US PCE price index, the price index for consumer durable goods declined from a year earlier in each of the 87 quarters since 1995's third quarter. The current quarter will mark the 22nd anniversary of consumer durable price deflation… Finally, unprecedented globalization helps to explain why lower rates of unemployment do less to spur wage growth. Remember, when the Phillips Curve was all the rage during the 1960's and 1970's, American labor was not competing with workers from China, India and other emerging market economies. Also, from 1965 through 1980, the sum of real exports and real imports approximated 9.6% of real GDP, which was far less than Q2-2017's 29.1% ratio.[27]

The restraining effects global markets have had on long-term U.S. bond yields have also restrained U.S. inflation, vis-a-vis labor markets. Although the FED expects to continue to raise rates gradually, Federal Reserve Chair Janet Yellen notes that "[t]he biggest surprise in the U.S. economy this year has been inflation," and that "this year's low inflation could reflect something more persistent than is reflected in our [FOMC] baseline projections."[28] Low unemployment and low inflation coupled with downward pressure on inflation from unwinding the balance sheet stands to temper funds rate increases and lead to a situation similar to 2016, when the FED anticipated four rate increases, but only increased rates once. Going forward, low trend GDP growth may present another obstacle to FED funds rate increases.

Looking at the relationship between trend GDP growth and estimates of the natural interest rate presents a ceiling to how high the funds rate may be increased before it begins to stymie economic growth.[29] Economic models used by economist at the FED use estimates of

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[27] Lonski, J., *Jobless Rate's Waning Influence on Inflation and the Fed*, Moody's Capital Market Research, Inc. August 17, 2017.

[28] Smialek, J., *Yellen Calls Inflation the 'Biggest Surprise' in the Economy*. Bloomberg. October 15, 2017 https://www.bloomberg.com/news/articles/2017-10-15/yellen-says-fed-to-raise-rates-gradually-as-inflation-picks-up.

[29] The natural interest rate is the real short-term interest rate that allows for GDP to grow at its trend rate, while allowing for stable inflation. Short-term rates below the natural rate are thought of as expansionary; meanwhile, short-term rates above the natural rate are thought of as contractionary.

a natural interest rate equal to the real trend growth rate of output, currently 2.2%.[30] The CFA Program curriculum[31] estimates the natural interest rate to be the real trend growth rate plus long-run expected inflation (2.2 + 2.0 = 4.2%).[32] With the funds rate at 1.25%, four more short-term rate increases of 25 basis points would take the funds rate to 2.25%, a rate close to the trend growth rate of the economy; meanwhile, it would require significantly more short-term rate increases, or rate increases higher than 25 basis points to take the funds rate close to the natural interest rate derived using the calculation from the CFA Program's curriculum. This shows one of the limits the FED must grapple with in determining which monetary policy tool to engage to steer the economy: the funds rate, or the balance sheet.

The degree to which the FED's unwinding of its balance sheet effects long-term rates may also dampen economic expansion. If the FED's balance sheet unwinding leads to increases in term premiums, the increased yields may incentivize saving, reducing consumption. Increases in longer-term rates make it more costly for consumers and businesses to finance longer-term assets, reducing consumption and economic growth. However, in the event that the economy begins to experience persistently high inflation, the FED may be forced to precipitate unwinding of its balance sheet, instead of increasing short term rates, to prevent and inversion of the yield curve.

Low inflation and low economic trend growth are positioned to continue to pull on interest rates because tighter monetary policy in the face of low inflation and growth is restrictive. As evinced from the data described above, long-term debt yields have fluctuated little in the past several years, have shown no correlation to short-term rates, and have remained relatively stable since the KCPL rate case. Going forward, there is little evidence that long-term interest rates will change significantly. This is an important consideration because investors required ROE is lower in low interest rate environments, a consequence of

[30] Holston, K., Laubach, T., & Williams, C., (2016). *Measuring the Natural Rate of Interest: International Trends and Determinants*. Finance and Economics Discussion Series 2016-073. Washington: Board of Governors of the Federal Reserve System, https://www federalreserve.gov/econresdata/feds/2016/files/2016073pap.pdf

[31] Clare, A. & Thomas, S. (2011), *Monetary and Fiscal Policy*. Reading 18, Economics, CFA Program Curriculum, 2017, Level I, Volume 2.

[32] Staff used the mid-point of long-run projected real GDP for trend growth and a 2% inflation rate for long-run expected inflation.

investors searching for higher yields through the purchase of low risk equities – utilities serve this purpose well.

## 2. Capital Market Conditions

### a. Utility Debt Markets

The compression between short-term and long-term Treasury yields has been mirrored by utility bonds in utility debt markets, signaling reduced risk premiums. Schedule 4-3 shows the average yields for Treasuries and utility bonds, and Schedule 4-4 shows spreads and the long-run average spread between Treasuries and utility bonds since January 1, 1980. The average public utility bond yields, reported by Mergent Bond Record, for 2015, 2016, and 2017 to date are 4.38%, 4.11%, and 4.11%, respectively. The average spread between 30-Year Treasuries and utility bonds (154 basis points, 151 basis points, and 119 basis points in 2015, 2016, and 2017, respectively) changed little from 2015 to 2016. Since the KCPL rate case, however, 30-Year Treasury yields have risen while average public utility bond yields have remained stable; resulting in compressed spreads between Treasuries and utility bond yields.[33] A 119 basis points spread is similar to spreads seen in 2013 and 2014, but outside of the long-run average spread of 150 basis points. Treasury yields will have to come down, or utility bond yields will have to rise for spreads to come in line with historical averages. If the current situation persists, historical spreads will gradually decline.

Schedule 4-5 shows the average yields on 'A'-rated utility bonds versus 'BBB'-rated utility bonds since January 1, 2011. Since January 1, 2011, the average spread between 'A' rated utility bonds and 'BBB'-rated utility bonds is 62 basis points. The average 'A'-rated utility bond yield for the three-months ended October 31, 2016, corresponding to the timeframe in which utility capital markets were evaluated for purposes of the KCPL rate case, was 3.67%.[34] The average A-rated utility bond yield for the three months through October 31, 2017 was 3.88%, an increase of 21 basis points. The average 'BBB'-rated utility bond yield for the three-months ended October 31, 2016, was 4.27%. The average 'BBB'-

[33] The compressed spread may be the result of a lag in utility bond markets, or may indicate a reduction in risk premiums.

[34] Staff hired Randall Woolridge to sponsor rate of return testimony in the KCPL rate case. He analyzed utility security prices through October 2016. After October 2016, Treasury yields increased for a few months post the nomination of Trump as president.

rated utility bond yield for the three months through October 31, 2017 was 4.24%, a decrease of 3 basis points.[35]

To the extent Missouri's utilities, or at least their parent companies, have outstanding bonds traded in the secondary markets, it is also relevant to analyze this company-specific data to determine a reasonable estimate of the cost of capital, and a reasonable allowed ROE. Although this company-specific debt yield information is helpful because it informs the Commission as to the yield investors are currently requiring on Missouri utilities', and/or their parent companies' debt capital, Staff notes that some of the bonds are thinly traded. Additionally, the terms of some of these bonds may differ, such as the time to maturity, secured/unsecured, callable or not, date it is callable, etc. Staff specifically analyzed bonds that had maturities of approximately 20 years or greater and those that had at least four trades during August, September, and October, 2016 (the general period evaluated by ROR witnesses in the KCPL rate case) and four trades during August, September, and October, 2017 (the period analyzed in this case).

MAWC does not have any outstanding bonds traded in secondary markets. American Water issues debt to third-party investors on behalf of its subsidiaries; therefore, American Water's bonds are the bonds traded in secondary markets. American Water has two bonds with maturities of 20 years or more that are traded fairly frequently.[36] These bonds have maturities of 20, and 25 years; have an 'A' rating from S&P and an 'A3' rating from Moody's, and are unsecured, callable notes; these bonds traded at an average yield of 3.62%, and 3.42%, respectively, for the three months ended October 2016. During the three months through October 31, 2017, these bonds had an average yield of 3.82%, and 3.79%, respectively. Based on the data related to American Water's bond yields, 'A'- rated water utility bond costs have increased since the fall of 2016.

Because the Commission determined an allowed ROE of 9.5% was appropriate for KCPL based on its hearing of market evidence from the fall of 2016 to early 2017, a comparison of KCPL's debt yields during this period compared to current yields will help inform the Commission of any cost of capital changes. However, being that

[35] The yield reduction in BBB rated utility bonds compared to an increase in yield of A rated utility bonds indicates a reduction in the required risk premium.

[36] Symbol-AWK.GJ, CUSIP-03040WAD7; Symbol-AWK3943696, CUSIP-03040WAJ4.

Great Plains Energy, KCPL's parent company, has been engaged in merger and acquisition activity over the last several months, KCPL's debt yields may have been influenced by such activities. Notwithstanding the above, KCPL's debt is rated two notches lower by S&P and one notch lower by Moody's compared to the ratings S&P and Moody's ascribe to American Water's debt. KCPL issues its own debt and this debt is traded in the secondary markets. KCPL has one long-term bond that trades fairly frequently.[37] The bond matures in 24-years, has a 'BBB+' rating from S&P and a 'Baa1' rating from Moody's, and is an unsecured, callable note. During the three months through October 31, 2016, this bond had an average yield of 4.22%. During the three-months ended October 31, 2017, this bond had an average yield of 4.13%.[38]

Two of Ameren Missouri's bonds are rated closely in line to those of American Water. They are rated A by S&P and A1 by Moody's, have maturities of 25 and 29 years, and are secured, callable notes.[39] S&P's 'A' ratings imply similar credit quality for Ameren Missouri's and American Water's bonds. Moody's A1 ratings imply Ameren Missouri's bonds have better credit quality than American Water's, and that the cost of capital for these bonds should be slightly lower than the cost of capital for the aforementioned American Water bonds. Moody's higher rating is a result of the bonds' being secured. For the three-months ended October 31, 2016, Ameren's bonds had an average yield of 3.85% and 3.64%; for the three-months ended October 31, 2017, these bonds had average yields of 3.62% and 3.40%, respectively.

Utility debt markets show that bond risk premiums have declined compared to the risk free rate. Evidence from within utility debt markets shows that risk premiums between lower medium grade and upper medium grade rated, Missouri utility bonds, have also declined. It appears that investors are still willing to accept even lower returns for the senior security offered by secured bonds. Consequently, although yields on American Water's bonds increased, lower risk premiums coupled with the downward drift on yields of secured bonds shows that utility debt markets have not changed significantly since the KCPL rate case. This

[37] Symbol-GXP.HD, CUSIP-485134BH2.

[38] The relationship in yields evinced when comparing the increased yields of American Water's A rated bonds (29 basis points) to the reduced yields in KCPL's lower rated BBB+ bond (-9 basis points) implies that investors are willing to accept lower yields at higher risk levels, equating to reduced risk premiums.

[39] Symbol-AEE4078788, CUSIP-02361DAM2; Symbol-AEE4318934, CUSIP-02361DAQ3.

is important because, to the extent the Commission believes its 9.50% allowed ROE for KCPL was reasonable, and the cost of debt information was looked at in isolation, without considering cost of equity estimation methodologies, this would suggest that a similar allowed ROE may be considered fair and reasonable for MAWC. After review of the utility equity markets, Staff believes a comparison of its cost of equity results, between industries, supports a lower allowed ROE for MAWC.

**b. Utility Equity Markets**

For the twelve months ending October 31, 2017, the total return on the Standard & Poor's 500 ("S&P 500") was 23.63%,[40] the total return on Staff's electric utility proxy group was 21.26%,[41] and the total return on the Staff's water utility proxy group was 19.51%.[42] For the five years ending October 31, 2017, compounded annual total returns for the S&P 500 were 15.18%,[43] compounded annual total returns for Staff's electric utility proxy group were 16.75%,[44] and compound annual total returns for Staff's water utility group were 18.04%.[45] The fact that the water and electric utility industries have outperformed the S&P 500 over the last five years is largely because of increased valuation levels of utility stocks due to a general decline in long-term interest rates, i.e., a decline in the cost of capital. In the 2014 UE and KCPL rate cases, Case Nos. ER-2014-0258 and ER-2014-0370, respectively, the Commission agreed that the evidence of lower interest rates, lower dividend yields and higher price-to-earnings (P/E) ratios support lower allowed ROEs.[46] The Commission specifically stated the following in its Report and Order in the UE rate case, which was reaffirmed in paragraph 32 of the Commission's Report and Order in the KCPL rate case:

> In its decision regarding Ameren Missouri's last rate case, the Commission established an ROE of 9.8 percent. Since 2012, when that case was decided, interest rates have declined by approximately 37 basis

[40] SNL Financial.

[41] SNL Financial.

[42] Value Line information provided total return information for the water proxy group as of September, 2017.

[43] SNL Financial.

[44] SNL Financial.

[45] Value Line information provided total return information for the water proxy group as of September, 2017.

[46] "P/E is inversely related to the required rate of return; that is, as the required rate of return increases, the P/E ratio declines." Nagorniak, J., & Wilcox, S. (2010), *Equity Valuation: Concepts and Basic Tools*. Reading 50, Equity and Fixed Income, CFA Program Curriculum, 2017, Level I, Volume 5.

> points. Furthermore, utility stock prices have increased and their dividend yields have gone down. This indicates that utilities' cost of capital has decreased because they need to sell fewer shares to generate the capital they need to support their investments. As MIEC's witness, Michael Gorman, explained: "Because the price of stock has gone up and the other parameters of the stock have not significantly changed, that's a clear indication that investors have reduced their required cost of capital which has bid up the stock price." This suggests the ROE allowed to Ameren Missouri should also be decreased. [47]

The Commission reaffirmed the 9.5% ROE it allowed KCPL in its 2014 rate case in the recently completed 2016 rate case, Case No. ER-2016-0285. Staff will focus on comparing and contrasting water utility stocks to those of electric utility stocks for the period since the fall of 2016 to inform the Commission on whether the general cost of capital level has changed since the Commission reaffirmed its allowed ROE for KCPL and whether a lower allowed ROE is justified for MAWC.

One needs to understand the fundamental drivers of returns for each industry in order to be able to determine what, if any, changes have occurred to the cost of equity for these industries since the fall of 2016. While the water utility industry does have a high dividend payout ratio, it is not as high as the average for the electric utility industry. Consequently, water utility industry stocks tend to create a greater proportion of their returns from capital gains than electric utility industry stocks. As Staff has explained in recent utility rate case testimonies, the biggest cause for high utility stock P/E ratios has been persistently low long-term interest rates. High P/E ratios have resulted in continued declines to utility dividend yields.

Although P/E ratios and dividend yields for the water, gas and electric industries tend to be highly correlated, there are differences in their absolute values. The water utility industry consistently has lower dividend yields and higher P/E ratios than the gas and electric industry. According to U.S. Capital Advisors, P/E ratios (earnings based on 2018 estimated EPS) are 27.5x for the water utility industry, 23.5x for the gas utility industry and 20.2x for the electric distribution industry.[48] U.S. Capital Advisors specifically stated the following about the water utility industry:

[47] Case No. ER-2014-0258, Report and Order, April 29, 2015, pp. 65-66.

[48] Daniel M. Fidell, "Q3'17 Downstream Earnings Preview," U.S. Capital Advisors, October 25, 2017.

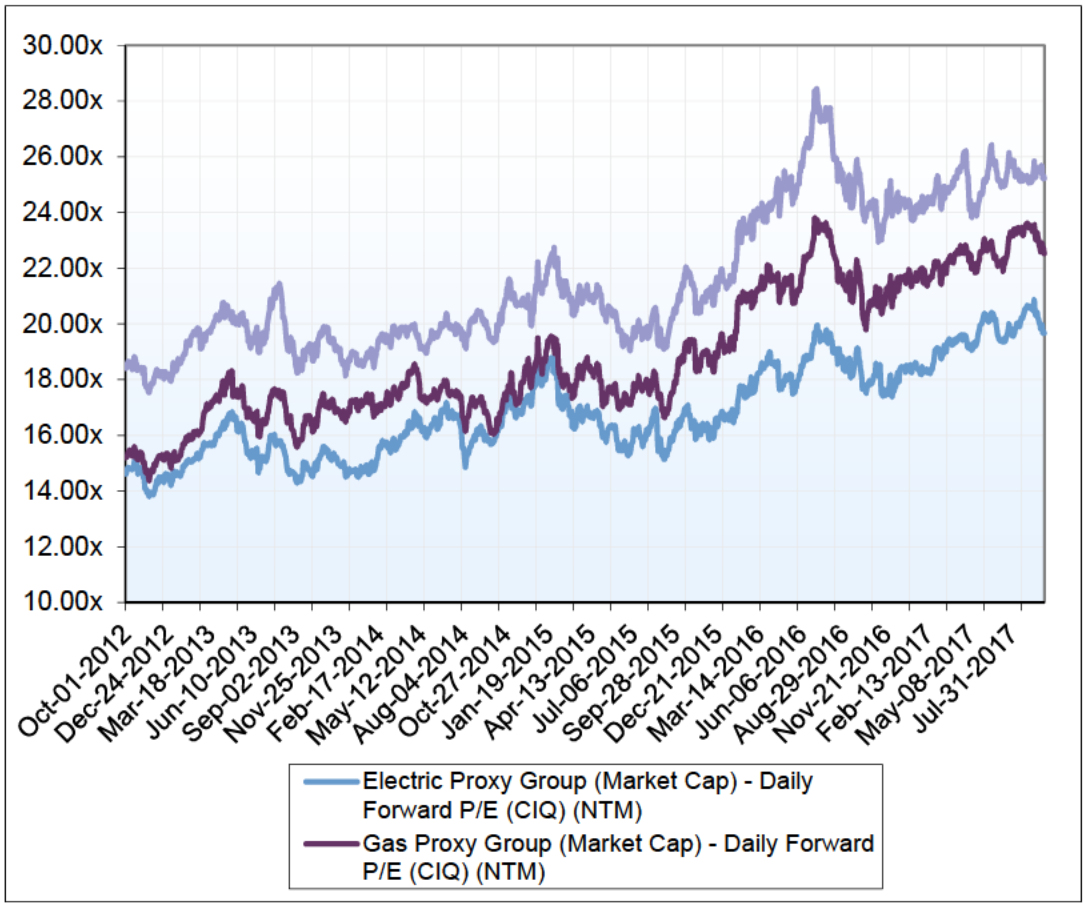
> **Water Utilities:** Among the sectors, safe-haven water utes [abbreviation for utilities] continue to trade the richest, at ~26x P/E [2019 estimated EPS] and ~13.5x EV/EBITDA [2019 EBITDA], the high end of historic trading ranges and one turn higher vs. Q2.

Based on Staff's water utility proxy companies and electric utility proxy companies that had market data back to 2000, Staff determined that the total return from capital gains was 77% for the water utility industry and 60% for the electric utility industry. The fact that water utility stocks generate more of their returns from growth in the stock price, as compared to the electric utility industry, helps explain a lower dividend yield and a higher P/E ratio as compared to the electric utility industry.

It is difficult to point to any specific capital market data to determine if and by how much the cost of equity for the water utility industry may differ from the electric utility industry. In the following paragraphs Staff will identify and discuss some of the valuation differences between the two industries in recent months and how this compares to the valuation of the two industries in the fall of 2016.

For the three-months ended October 31, 2017, the average dividend yield and average one-year (1) year forward P/E ratio for Staff's water utility proxy group was 1.98% and 26.83x, respectively. This compares to an average dividend yield and one-year (1) forward P/E ratio of approximately 2.18% and 25.80x, respectively, for the three-month period ending October 31, 2016. The water utility industries' lower dividend yields and higher P/E ratios now, compared to the fall of 2016, imply a lower cost of equity.

For the three-months ended October 31 2017, the average dividend yield and P/E ratio on Staff's electric utility proxy group was 2.91% and 20.86x, respectively. This compares to an average dividend yield and P/E ratio of 3.17% and 18.82x, respectively, for the three-months ended December 31, 2016. Based on the electric utility proxy group's lower dividend yields and higher P/E ratios compared to the fall of 2016, electric utility stocks also seem to be implying a lower cost of equity for the electric utility industry now, as compared to last year. The below graph shows the changes in the P/E ratios graphically over the last five years:




Assessing the average P/E premium of the water utility group compared to electric utility group shows that the premium investors are willing to pay for water utility stocks versus electric utilities has come down from 27.05% for the three-months ended October 31, 2016 to 22.25% for the three-months ended October 2017, a reduction of 4.80%.[49] The view that water utility companies are less risky than electric utility companies is corroborated by equity analysts at Wells Fargo:

> **Gas & Water Premiums.** In light of recent price action and diminished near-term M&A expectations (tax reform uncertainty), we revisited the often asked question of 'where should gas and water utilities trade relative to electrics?' Within our valuation toolbox, we consider the dividend discount model (DDM) to be particularly useful for this exercise. Making the following assumptions for (1) near-term growth (5% elecs and 6% gas/water), (2) discount rate (7.5% elecs,

[49] This equates to reductions in risk premiums in electric utility stocks. If electric utilities are viewed as more risky than water utilities, the reduced P/E premium on water utilities over electric utilities indicates that investors are willing to pay more for higher risk electrics now, compared to October 2016.

> 7.25% gas and 7.0% water) and (3) long-term payout ratio (70% elecs and 65% gas/water), our generic DDMs suggest gas and water utilities should trade at 15% and 22% premiums to electrics, respectively. This is not too far off from current 17-19E P/E multiple premiums of 16-19% for gas and 24-26% for water utilities.[50]

Although a decline in both water and electric utility dividend yields of 20 basis points and 26 basis points, respectively, in one year certainly supports a decline in required returns, Staff recognizes that other factors can contribute to the increase in valuation ratios. One such factor to consider is a higher expected growth rate in one period as compared to another. This affects valuation ratios because investors believe this expected growth will translate into higher EPS and DPS. For the three-months ended October 31, 2017, the expected growth rates used for the electric proxy group decreased .71% while P/E ratios increased 10.84% compared to the three-months ended October 31, 2016; meanwhile, expected growth rates for the water proxy group have increased 5.26% while P/E ratios have increased 3.99% compared to the three-months ended October 31, 2017.[51] As can be seen in the graph Staff provided above, the changes in the P/E ratios for the gas, electric, and water industries are highly correlated. This implies that certain macro factors, such as interest rates and risk premiums, impact each industry similarly. However, the behavior exhibited in the electric proxy group shows that investors are willing to pay more for electric utilities, for their higher yield, despite the lower growth.

### D. MAWC's and American Water's Operations

The following excerpts from American Water's Form 10-K filing with the United States Securities and Exchange Commission ("SEC") for the 2016 calendar year, provides a good description of American Water's current business operations and current organizational structure:

> Through its subsidiaries, American Water is the largest and most geographically diverse investor-owned publicly-traded water and wastewater utility company in the United States, as measured by both operating revenues and population served. We employ approximately

[50] Neil Kalton, CFA, Sarah Akers, CFA, Jonathan Reeder, Glen F. Pruitt, "Between The Lines: Wells Fargo Utility Monthly," March 31, 2017, p. 1, Wells Fargo Securities.

[51] Staff did not have access to year ago growth forecasts from Value Line for the water utility proxy group. For comparison, Staff relied on growth rates provided by S&P Global Market Intelligence for both groups, for both time periods.

6,800 professionals who provide drinking water, wastewater and other related services to an estimated 15 million people in 47 states, the District of Columbia and Ontario, Canada. Our primary business involves the ownership of utilities that provide water and wastewater services to residential, commercial, industrial and other customers, including sale for resale and public authority customers. Our Regulated Businesses that provide these services are generally subject to economic regulation by certain state utility commissions or other entities engaged in utility regulation. Certain federal and state governments also regulate environmental, health and safety, and water quality matters. Our Regulated Businesses provide services in 16 states and serve approximately 3.3 million customers based on the number of active service connections to our water and wastewater networks. We also operate several businesses that provide a broad range of related and complementary water and wastewater services in four operating segments that individually do not meet the criteria of a reportable segment in accordance with GAAP. These four non-reportable operating segments are collectively presented as our Market-Based Businesses, which is consistent with how management assesses the results of these businesses.

## E. MAWC and American Water's Credit Ratings

### 1. Credit Ratings

MAWC does not receive an individual credit rating as a stand-alone entity. MAWC relies on American Water Capital Corporation (AWCC) to issue debt financing for American Water's subsidiaries, which in turn loans these proceeds to the subsidiaries through internal loan agreements. It is important for American Water to have its debt rated so potential debt investors can evaluate rating agencies opinions' in determining a fair price to pay for American Water's debt. Staff understands the credit quality of AWCC to be based on American Water's consolidated credit quality.

AWCC is a wholly-owned subsidiary of American Water that was created for the special purpose of serving as the primary funding vehicle for American Water and its subsidiaries. Although AWCC and American Water are assigned credit ratings, because AWCC's purpose is to manage and issue financing for American Water, the credit ratings for each entity are based on American Water's consolidated operations. American Water is currently rated by Moody's and Standard & Poor's ("S&P"). The corporate credit ratings assigned to American Water by Moody's and S&P are 'A3' and 'A', respectively.

## F. Cost of Capital

In order to arrive at Staff's recommended ROR, Staff specifically examined (1) an appropriate ratemaking capital structure, (2) the Company's embedded cost of debt, and (3) an evaluation of a fair and reasonable allowed ROE in light of the Commission's recent decision in the KCPL rate case.

### 1. Capital Structure

Staff has consistently recommended the Commission use American Water's capital structure for MAWC's ratemaking capital structure. Nothing has changed since MAWC's last rate case to cause Staff to change its position. Staff offers the following reasons for recommending that American Water's capital structure be used to set MAWC's allowed ROR:

First, MAWC is not operating as an independent entity, at least when considering MAWC's procurement of financing and the cost of that financing. For example, MAWC has a Financial Services Agreement[52] with AWCC through which AWCC arranges short-term borrowings and performs cash management for MAWC. Under the cash management program, operating cash surpluses and deficits of each participating affiliate are lent to or borrowed from AWCC on a *daily* basis, showing heavy integration of MAWC's financial management with American Water's other operations. While MAWC has accessed the capital markets directly in the past by issuing tax-advantaged bonds through the State Environmental Improvement and Energy Resources Authority, MAWC has not done so for over a decade. AWCC is the primary source of long-term and short-term debt financing for MAWC. As of June 30, 2017, over 95 percent of the debt shown on MAWC's balance sheet was received by means of debt issuances by AWCC.

Second, the debt issued by AWCC is rated by credit rating agencies based on the consolidated credit quality of American Water. Therefore, the cost of any debt that MAWC receives from AWCC is and will be based on the consolidated creditworthiness of American Water, (i.e. the business risk and financial risk associated with American Water's consolidated operations).

[52] See Financial Service Agreement, attached as Appendix 2 to MAWC's Application filed in Case No. WF-2002-1096.

Third, American Water is primarily a regulated water distribution utility, meaning that the business risks of American Water are similar to that of MAWC. If the business risks of the parent company are similar to that of the subsidiary, then each entity should be able to incur similar amounts of financial risk. Presumably this should cause their capital structures to be fairly similar. Because it is the parent company's consolidated operations that drive the cost of debt capital and the cost of equity capital, the parent company's capital structure is the capital structure that will be analyzed by investors when determining the required rate of return for debt issued by AWCC and equity issued by American Water. In fact, American Water's SEC Form 10-K filings indicate that American Water's capital structure has contained approximately 46% equity over the last three years. Staff notes that it is not always appropriate to use the parent company's cost of common equity if the parent company's business risk profile is significantly different than that of its regulated subsidiaries.

Fourth, American Water employs double leverage, a term used to describe a situation in which the parent company uses financing other than equity financing, usually debt, raised at the parent company level to infuse equity in its subsidiaries. American Water has approximately $1.4 billion[53] of debt outstanding at the holding company level and its only assets are its stock ownership in its water utility subsidiaries, and investments in its market-based businesses. Market-based businesses constitute approximately 3 percent of American Water's assets[54]; therefore, a significant portion of funds from this debt financing are apparently being used to invest in American Water's subsidiaries as equity infusions.[55]

Finally, it appears that all debt issued by AWCC and loaned to MAWC is essentially guaranteed by American Water. Although there are internal loan documents between MAWC and AWCC, the ultimate responsibility for the payment of the debt service on the debt through AWCC rests with American Water. The subsidiary's use of debt financing that is backed by the parent, supports the Staff's recommendation to use American Water's consolidated capital structure.

[53] American Water Works Company, Inc's 10-K for period ending December 31, 2016.

[54] American Water Works Company, Inc's 10-Q for the quarter ending June 30, 2017.

[55] Because American Water does not produce stand-alone holding company financial statements, Staff could not directly confirm this, but this is consistent with Staff's understanding of American Water's operations.

The capital structure Staff used for this case is American Water's capital structure on a consolidated basis, as of June 30, 2017. Schedule 6, attached within Appendix 2 to this Report and incorporated by reference herein, presents American Water's capital structure and associated capital ratios. The resulting capital structure consists of 43.99 percent common equity, 51.02 percent long-term debt, 0.09 percent preferred stock and 4.91 percent short-term debt.

MAWC's response to Staff Data Request (DR) No. 0175 indicates that American Water has been consistently carrying a higher monthly balance of short-term debt as compared to the monthly balances of construction work in progress (CWIP). This implies that American Water is using short-term capital to support its long-term assets, which lowers the overall cost of capital to support its long-term asset base. Consequently, it is appropriate to include a net amount of short-term debt in the capital structure for purposes of setting MAWC's allowed ROR. Staff recommends 4.91 percent of MAWC's ratemaking capital structure be allocated to short-term debt.

Schedules 5-1 and 5-2 show MAWC's and American Water's historical capital structures for the last ten years. Based on the information shown in Schedules 5-1 and 5-2, it appears that American Water has targeted a common equity ratio of approximately 44% to 47%. American Water appears to prefer a common equity ratio of 47% to 50% for its MAWC operations. Because MAWC does not issue its own debt, Staff believes American Water maintains a higher equity ratio at MAWC for the purpose of attempting to achieve a higher revenue requirement in the form of a higher pre-tax rate of return. For these reasons, the Commission should set MAWC's rate of return based on American Water's capital structure, which reflects the capital structure that American Water targets for purposes of capitalizing all of its regulated water utility operations.

**2. Embedded Cost of Debt**

Staff recommends the use of American Water's consolidated embedded cost of debt for purposes of setting MAWC's ROR, which is 5.35% based on MAWC's response to Staff DR No. 0182.

### 3. Embedded Cost of Preferred Stock

Staff recommends the use of American Water's consolidated embedded cost of preferred stock for purposes of setting MAWC's ROR, which is 8.67% based on MAWC's response to Staff DR No. 0182.

### 4. Cost of Short-Term Debt

Staff recommends the use of American Water's average cost of short-term debt for purposes of setting MAWC's ROR, which averaged .99% for the twelve months ended June 30, 2017.

### 5. Cost of Common Equity

Staff estimated MAWC's cost of common equity through a comparable company cost-of-equity analysis of a proxy group of water utility companies. Additionally, Staff used a CAPM analysis and a survey of other indicators as a check of the reasonableness of its recommendation.

#### a. The Proxy Group

Staff accepted company's witness Ann E. Bulkley's proxy group, and used the same proxy group to complete Staff's ROE analysis.

#### b. The Constant-growth DCF

Staff started its evaluation of the water utility industry's cost of common equity by applying values derived from the proxy group to the constant-growth DCF model. The constant-growth DCF model is widely used by investors to evaluate stable-growth investment opportunities, such as regulated utility companies. The constant-growth version of the model is usually considered appropriate for mature industries such as the regulated utility industry.[56] It may be expressed algebraically as follows:

[56] Aswath Damodaran, *Investment Valuation: Tools and techniques for determining the value of any asset,* University Edition, John Wiley & Sons, Inc., 1996, p. 195-196; John D. Stowe, Thomas R. Robinson, Jerald E. Pinto and Dennis W. McLeavey, *Analysis of Equity Investments: Valuation*, Association for Investment Management and Research, 2002, p. 64.

$$k = D_1/P_0 + g$$

Where: $k$ is the cost of equity;

$D_1$ is the expected next 12 months dividend;

$P_0$ is the current price of the stock; and

$g$ is the dividend growth rate.

The term D1/P0, the expected next 12-months' dividend divided by current share price, is the dividend yield. Staff calculated the dividend yield for each of the comparable companies by dividing the weighted average of the 2017 (1/4) and 2018 (3/4) calendar year projected dividends per share from Value Line (see Schedule 13) by the monthly high/low average stock price for the three months ending October 31, 2017 (see Schedule 12).[57] Staff used the above-described stock price because it reflects current market expectations. The projected average dividend yield for the water utility proxy group is approximately 2.04%, unadjusted for quarterly compounding.

**i. The Inputs**

In the DCF method, the cost of equity is the sum of the dividend yield and a growth rate ("g") that represents the projected capital appreciation of the stock. In estimating a growth rate, Staff considered the actual dividends per share ("DPS"), earnings per share ("EPS") and book value per share ("BVPS") for each of the comparable companies and also the projected DPS, EPS and BVPS. Staff also reviewed equity analysts' consensus estimates for long-term compound annual growth rates in EPS as reported by Reuters. Reuters did not report any long-term growth rate estimates in EPS for three of the eight companies in the proxy group. The average consensus long-term growth rates in EPS for the companies in which analysts provided estimates was 6.75% as of October 30, 2017 (s*ee* Schedule 11-6).

While Staff may accept the argument that water utilities' EPS can grow over the next five years at a growth rate of approximately 6.75%, a rate which is higher than the consensus GDP long-term growth rate estimates, Staff notes that it would be unrealistic to conclude that

[57] The monthly high/low averaging technique minimizes the effects of short-term stock market volatility on the calculation of dividend yield. P0 is calculated by averaging the highest and the lowest price for each month during the selected period.

this growth rate is sustainable in perpetuity because it does not give consideration to empirical and logical information that suggests that utility companies should grow at a rate less than that of the overall economy.

Historical data indicates that companies in the S&P 500 (a proxy for the U.S. capital markets) have retained over 55% of their earnings for reinvestment since January 1, 2000.[58] In that instance it is acceptable to estimate the cost of equity using a multi-stage DCF that reflects a growth rate higher than nominal GDP in the first stage(s) and then a consensus long-term GDP growth rate estimate for the perpetual stage.

Although regulated water utilities tend to retain more earnings (average 33% since 2001) than regulated electric utilities (average 25% since 2001), which supports the logic of a higher perpetual growth rate than that used for the electric utility industry, it does not necessarily support the notion that water utilities should have the same perpetual growth rate as the S&P 500. However, due to a lack of data for long-term industry-specific growth rates for the water utility industry, Staff is assuming the perpetual growth rate for the water utility industry will be consistent with long-term GDP growth expectations.

A projected long-term nominal GDP growth rate[59] should be conservatively ascribed as an upper constraint when testing the reasonableness of growth rates used to estimate the cost of equity for a regulated water utility. A high-end estimate for nominal GDP is not much higher than 4.2%, causing an estimated constant growth rate over this rate to be highly suspect.

Because Staff is not relying on the constant-growth DCF to quantify the difference between the cost of equity for the electric and water utility industries, Staff believes its growth rate estimates are not as critical as those it assumed in its multi-stage DCF. However, Staff believes it is important to consider experience in dividend growth achieved by water utility companies and also the basic characteristics of water utility stocks when determining a reasonable expected growth rate in the DCF. It is critical to remember that the growth rate used in the DCF is supposed to represent the expected capital gains (growth in the stock price) of the utility. Analysts at Bernstein Research note that over long-term holding periods the

[58] http://www.spindices.com/indices/equity/sp-500.

[59] The nominal GDP growth rate, contrasted to the real GDP growth rate introduced earlier, is not adjusted for inflation.

majority of utility investors' return from investing in utility stocks has been from the payment of the dividend. Specifically, they state that:

> [h]istorically, the bulk of shareholders returns on utility stock has derived from dividends rather than from capital gains. Between 1974 and 2010, 68% of utilities' total returns over investment periods of 10 years came from dividends, while only 32% came from capital gains. The converse is true of the broader market: over the same period, only 42% of long term returns on the S&P 500 came from dividends, while 58% came from capital gains.[60]

Given the Bernstein Research commentary, it seems illogical to expect the growth component of the return to be higher than the dividend yield.

Recalling Staff's calculation of the percentage of total returns from dividends (33%), compared to capital gains (67%), experienced by investors of the water proxy groups since January 1, 2000, implies that expected returns are 6.33%. It appears that since 2010 significantly more of investors' returns have come from capital gains due to a significant expansion in the P/E ratios; however, the extent to which they were anticipated or required is difficult to extrapolate. Although Staff considers it unlikely that the fundamental characteristics of water utility stocks will cause returns from capital gains to be much higher than dividend returns, because historical dividend growth has been approximately 4.0%, and expected dividend growth over the next five years is expected to be higher, Staff used a constant growth rate of 4.0% to 5.0% to arrive at a cost of equity estimate of 6.14% to 7.14%.

### c. The Multi-stage DCF

#### i. Overview

The constant-growth DCF model may not yield reliable results if industry and/or economic circumstances cause expected near-term growth rates to be inconsistent with sustainable perpetual growth rates.[61] This especially seems to be the case for the water utility industry because the dividend yields have been fairly low (around 2% compared to slightly around 3% for the electric utility industry) and projected near-term growth rates are higher

[60] Broquin, F., Singh, S., & Wynne, H., U.S. Utilities: Our Dividend Growth Model Identifies Utilities Poised to pay more, May 20, 2011, Bernstein Research.

[61] Dr. Aswath Damodaran, Professor of Finance of the New York University Stern School of Business, advocates using a multi-stage methodology if the constant-growth rate is expected to be 1-2% different than the earlier stage growth rates. Aswath Damodaran, *Investment Valuation: Tools and techniques for determining the value of any asset,* University Edition, John Wiley & Sons, Inc., 1996, p. 193.

than economic growth projections. Although Staff is not recommending the Commission allow an ROE based on the absolute value of its cost of equity estimates from either the single-stage or multi-stage DCF, Staff believes the multi-stage DCF should be used for purposes of determining if there is an identifiable cost of equity difference between the electric and water utility industries.

The Commission can use its recent 9.5% allowed ROE for KCPL as a reference point, because the cost of capital for all subsectors of the utility industry are heavily influenced by the same factors (e.g. changes in interest rates, flight to quality, low business risk). Although internal Staff did not sponsor testimony in the recent KCPL rate case, in order to provide the Commission with Staff's opinion on whether the cost of equity for the electric utility industry has changed since the Commission made its decision in the KCPL case, Staff performed a multistage DCF analysis on the electric utility industry for the end of 2016 and compared it to a current multi-stage DCF analysis of the same proxy group. This will assist the Commission with determining if its 9.5% would still be reasonable for Missouri's major electric utilities. Staff then compares this electric industry cost of equity estimate to its multi-stage cost of equity estimate for the water industry to assist the Commission with determining if an adjustment is warranted.

A multi-stage DCF may use either two or more growth stages, depending on the situation being modeled. In any case, the ability of a multi-stage DCF analysis to reliably estimate the cost of common equity is primarily driven by the analyst using a reasonable growth rate for the final stage because this rate is assumed to last into perpetuity. Where three stages are used, the second stage is generally a transitional phase between the high growth first stage and the constant growth final stage.[62]

In the present case, Staff used a three-stage DCF approach, the stages being years 1-5, years 6-10, and years 11 to infinity.[63] For stage one, Staff gave full weight to the analysts' five-year EPS growth estimates. For stage two, Staff linearly reduced the growth rate from the stage one level to the constant-growth third stage level, in which Staff assumed a perpetual growth rate consistent with a range of long-term expected steady-state economic

[62] John D. Stowe, Thomas R. Robinson, Jerald E. Pinto and Dennis W. McLeavey, *Analysis of Equity Investments: Valuation*, Association for Investment Management and Research, 2002, p. 71-72.

[63] In practice, Staff extended the third stage only to year 200.

growth rates. In the recent electric rate cases, Staff used a point estimate of 4.4% for long-term nominal GDP growth rate. The estimate of nominal GDP growth has come down to 4.2% based on the mid-point of current long-term sustainable real GDP projections of 1.8% to 2.54% (2.20%), compounded by the expected long-term GDP price deflator of 2.0% ((1.02 * 1.022) – 1) = .04244).

Staff's sources for the range of growth rates include the Congressional Budget Office ("CBO"), the Federal Reserve, the Organization for Economic Cooperation and Development (OECD), and the U.S. Energy Information Administration (EIA). The CBO projects an annual compound growth rate in real GDP of approximately 1.81% through 2027;[64] the Federal Reserve projects a central tendency real GDP growth in the range of 1.8% - 2.0% in the longer run;[65] OECD projections estimate real GDP growth of approximately 2.54% through 2027;[66] and EIA projections estimate real GDP growth of approximately 2.26% through 2027.[67] These long-term GDP projections are also lower than they were at the time of MAWC's last rate case in 2015.

Although Staff is using a range of growth rates between 3.5% to 4.2% for purposes of estimating an absolute value of the cost of equity for the water utility industry, for purposes of quantifying the difference between the cost of equity for the electric utility industry compared to the water utility industry, Staff will use the same nominal GDP estimate it used in the 2016 electric rate cases, which was 4.4%. If anything, the long-term economic projections are more pessimistic than they were in 2016 so using the previous higher nominal GDP growth estimate will cause a higher cost of equity estimate for the water utility industry (*see* Schedules 15-1 through 15-3).

Based on perpetual growth rate range of 4% to 4.4%, the absolute value of Staff's cost of equity estimate for the water utility industry is in the range of 6.44% to 6.78%, with a mid-point of 6.61%. This compares to Staff's results of 7.06% to 7.39% in MAWC's last rate case, Case No. WR-2015-0301. Although this is low as compared to allowed ROEs for the water utility industry, Staff has identified significant observable and practical evidence

[64] www.cbo.gov/publication/52801.

[65] https://www.federalreserve.gov/monetarypolicy/mpr_20170214_part3 htm.

[66] https://data.oecd.org/gdp/gdp-long-term-forecast htm.

[67] https://www.eia.gov/outlooks/aeo/data/browser/#/?id=18-AEO2017&cases=ref2017&sourcekey=0.

(a persistently low interest rate environment, reduced risk premiums, higher P/E ratios, and lower dividend yields) that supports the notion that the cost of equity for utility companies is fairly low at this time.

**ii. Stage one**

The first stage of a multi-stage DCF is usually quite specific due to the ability to forecast cash flows in the near-term with more accuracy. In fact, it is often the case that the first stage of a multi-stage DCF will be based on discrete cash flows projected on an annual basis for the next several years. However, in the context of discounting expected future DPS, it is often the case that a compound growth rate is applied to the current DPS to estimate the expected DPS over the next several years. Although it is rare for a company to tie its targeted DPS growth rate directly to a 5-year EPS projected compound growth rate, Staff decided to use these growth rates for the first 5-years of its multi-stage DCF because equity analysts' 5-year EPS forecasts are widely available and may provide some insight on expected DPS.

**iii. Stage two**

Stage two, i.e., the transition stage, is simply a gradual movement from above normal growth to more normal/sustainable growth for the final stage. Although stage two can also consist of forecasted discrete cash flows, because it is a transitional period, it is logical to linearly reduce the high growth first-stage growth over a specific period in order to gradually reduce the growth rate to the expected sustainable growth rate. Staff chose to do this over a 5-year period, which is fairly conventional in multi-stage DCF analysis.

**iv. Stage three**

Stage three is the final/constant-growth stage. In fact, the final stage can be reduced to the single-stage, constant-growth form of the DCF. Although this is the "generic" stage, it is extremely important to select a reasonable growth rate for this stage to arrive at a reliable cost of equity estimate.

**v. Preference for GDP Growth**

Although Staff is confident that investors do not expect electric and natural gas utilities' perpetual per share growth to be consistent with nominal GDP in the long-run, Staff does not have the same confidence about dismissing this assumption for the water utility industry. Staff is hesitant about assuming a perpetual growth rate less than nominal GDP for

the water utility industry because water utility companies consistently retain a greater proportion of their earnings for reinvestment than electric and gas utilities do. Although Staff does not have access to as much historical data on the water utility industry as it does the natural gas and electric utility industries, Staff did determine an average historical growth rate for the investor owned water utility companies for which Staff does have access.

### G. Tests of Reasonableness

Staff has tested the reasonableness of its DCF results, both by use of a CAPM analysis and consideration of other evidence.

#### 1. The CAPM

The CAPM is built on the premise that the variance in returns is the appropriate measure of risk, but only the non-diversifiable variance (systematic risk) is rewarded. Systematic risks, also called market risks, are unanticipated events that affect almost all assets to some degree because the effects are economy wide. Systematic risk in an asset, relative to the average, is measured by the Beta of that asset. Unsystematic risks, also called asset-specific risks, are unanticipated events that affect single assets or small groups of assets. Because unsystematic risks can be freely eliminated by diversification, the reward for bearing risk depends on the level of systematic risk. The CAPM shows that the expected return for a particular asset depends on the pure time value of money (measured by the risk free rate), the reward for bearing systematic risk (measured by the market risk premium), and the amount of systematic risk incurred by the asset (measured by beta). The general form of the CAPM is as follows:

$$k = Rf + \beta\,(Rm - Rf)$$

| | | |
|---|---|---|
| Where: | k | is the expected return on equity for a security; |
| | Rf | is the risk-free rate; |
| | β | is beta; and |
| | Rm - Rf | is the market risk premium. |

For inputs, Staff relied on historical capital market return information through the end of 2016. For the risk-free rate (Rf), Staff used the average yield on 30-year U.S. Treasury bonds for the three-month period ending October 31, 2017; that figure was 2.82%. For beta (β), Staff relied on Value Line betas.

The average beta for the proxy group was 0.71. For the market risk premium (Rm - Rf) estimates, Staff relied on the historical difference between earned returns on stocks and earned returns on bonds.[68] The first risk premium was based on the long-term arithmetic average of historical return differences from 1926 to 2016 - 6.00 %. The second risk premium was based on the long-term geometric average of historical return differences from 1926 to 2016 – 4.50%. The results using the long-term arithmetic average risk premium and the long-term geometric risk premium are 7.10% and 6.03%, respectively.

These cost of common equity results support the reasonableness of Staff's cost of equity estimates derived from its DCF analysis. Staff notes that U.S. Treasury yields and utility bond yields are quite low (at levels last experienced in the early 1960s) and that the spread between them is presently below their long-term average. It is logical in today's capital market environment that investors are only requiring returns on their utility common equity investment in the 6% to 7% range. As Staff will explain in its other tests of reasonableness, these cost of equity estimates are consistent with common sense tests.

**2. Other Tests**

**a. The "Rule of Thumb"**

A "rule of thumb" method allows an objective test of individual analysts' cost of equity estimates. Because this method is suggested in a textbook used for the CFA program, Staff believes this method is free of any bias from those involved in utility ratemaking. It is also a useful test because it is very straightforward and limits the risk premium to a 200-basis point range. The cost of equity is estimated by simply adding a risk premium to the yield-to-maturity ("YTM") of the subject company's long-term debt. Based on experience in developed markets, the typical risk premium is in the 3% to 5% range.[69] Considering that this is based on general U.S. capital-market experience and that regulated utilities are on the low end of the risk spectrum of the general U.S. market, a risk premium closer to 3% seems logical. This is especially true considering that regulated utility stocks behave like bonds. For the three months ended through October 31, 2017, "A" rated and "Baa" rated long-term

[68] From Duff & Phelps *2016 Valuation Handbook: A Guide to the Cost of Capital.*

[69] Courtois, Y., Drake, P., & Lai, G. (2007), *Cost of Capital*. Reading 36, Corporate Finance and Portfolio Management, CFA Program Curriculum, 2017, Level I, Volume 4.

utility bonds had average yields of 3.91% and 4.33% respectively.[70] Adding a 3% risk premium, the "rule of thumb" indicates a cost of common equity between 6.91% and 7.33%. Adding a 5% risk premium, the "rule of thumb" indicates a cost of common equity between 8.91% and 9.33%.

**b. Average Authorized Returns**

Although Staff believes it has appropriately considered this Commission's recent allowed ROE for purposes of its recommendation in this case, Staff recognizes that the Commission may also be interested in recent authorized ROEs for other water utility companies throughout the country. For consideration of authorized ROEs for other water utility companies, and how they compare to electric and gas utilities, the chart below presents information compiled and published by Regulatory Research Associates (RRA) which details the average allowed ROE's from Commissions around the U.S. in the years 2012 - 2017, along with the number of cases considered.

As of May 31, 2017

| | Water Utilities | | Electric utilities* | | Gas utilities | |
|---|---|---|---|---|---|---|
| Year | ROE% | (No. cases) | ROE% | (No. cases) | ROE% | (No. cases) |
| 2012 | 9.90 | (23) | 10.17 | (58) | 9.94 | (35) |
| 2013 | 9.73 | (11) | 10.03 | (49) | 9.68 | (21) |
| 2014 | 9.60 | (16) | 9.91 | (38) | 9.78 | (26) |
| 2015 | 9.78 | (12) | 9.85 | (30) | 9.60 | (16) |
| 2016 | 9.68 | (12) | 9.77 | (42) | 9.50 | (24) |
| 2017 | 9.43 | (6) | 9.77 | (23) | 9.44 | (7) |

* Electric ROE includes general rate cases and limited rider proceedings.
Source Regulated Research Associates, an offering of S&P Global Market Intelligence

Staff issued DR No. 0176 to MAWC to request authorized returns for each of American Water's subsidiaries. As can be seen in the attached Schedule 18, the authorized ROE resulting from fully litigated rate cases for American Water's other subsidiaries has ranged from 9.10% to 10.00% since June 15, 2015. There have been three authorized returns in 2017: 9.79% for Illinois-American Water Company effective January 1, 2017,

[70] Mergent Bond Record, November, 2017.

9.60% for Iowa-American Water Company effective March 24, 2017, and 9.10% for New York-American Water Company effective June 1, 2017.

### H. Fair and Reasonable Allowed ROE for MAWC Considering Allowed ROE for KCPL

Staff believes determining a fair and reasonable allowed ROE for MAWC must consider this Commission's recent decision during the KCPL rate case because the economic and capital market environments have not changed drastically since the Commission made that decision. Staff has already discussed its analysis of the utility debt and equity markets, but Staff has not expanded on the relative differences between the electric and water industries. Staff evaluated a wide range of data to estimate a fair allowed ROE for MAWC as compared to that recently allowed for KCPL, but Staff relied primarily on comparing its multi-stage DCF results for the water utility proxy group to its multi-stage DCF analysis of the refined electric utility proxy group Staff used in the GMO rate case, Case No. ER-2016-0156, which internal Staff would have used in the KCPL rate case if it had filed testimony.

### I. Update of multi-stage DCF analysis of the refined electric utility proxy group

Staff performed an updated multi-stage DCF analysis of the refined electric utility proxy it would have used in the 2016 electric utility rate case for KCPL if Staff had not hired a consultant. Please see Schedule 16-1 to 16-3 for this updated analysis. Staff's multi-stage DCF analysis for the electric utility industry assumed a perpetual growth rate range of 3.5% to 4% based on Staff's compilation and calculation of rolling 10-year compound growth rates for the electric utility industry for the period 1968 through 1999. Staff also used a perpetual growth rate of 4.4% based on the assumption that the electric utility industry could grow in perpetuity at the same rate as the expected long-term growth rate in the U.S. economy as measured by nominal GDP.[71] Based on stock prices for the three months through October 31, 2017, Staff's multi-stage DCF analysis of the electric utility proxy group indicates a cost of equity of 6.97% to 7.38% using the 3.5% to 4% terminal growth rates and 7.70% using nominal GDP for a terminal growth rate. Using data from last year when market data was

[71] Although current projections for long-term GDP show that expected growth has declined, for consistency Staff used the growth rate used in the KCPL rate case.

being evaluated to reaffirm KCPL's allowed ROE of 9.5%, the estimated multi-stage DCF cost of equity for this same proxy group was 7.18% to 7.54% using terminal growth rates in the range of 3.5% to 4%. Using nominal GDP for a terminal growth rate, Staff had estimated the COE for the electric utility industry at 7.86%. These lower cost of equity estimates now as compared to the fall of 2016 are supported by the valuation ratios Staff discussed earlier in this testimony that show lower dividend yields now compared to the fall of 2016 and higher P/E ratios now compared to the fall of 2016.

Considering the fact that an update of Staff's multi-stage DCF analysis from the electric utility case implies that the cost of equity is lower than when the Commission reaffirmed KCPL's 9.5% allowed ROE, Staff believes the current macro environment supports a lower allowed ROE for the electric utility industry. However, this only helps the Commission if it believes MAWC has a similar risk profile to KCPL. Staff's multi-stage DCF analysis on the water utility industry indicates that the cost of equity for the water utility industry is lower than it is for the electric utility industry. If Staff uses nominal GDP as the perpetual growth rate for both industries, this would imply that the water utility cost of equity is approximately 92 basis points lower than that of the electric utility industry. However, considering that the water utility industry tends to have lower dividend yields and higher projected growth rates than the electric utility industry, Staff believes it is appropriate to use a slightly higher growth rate for the water utility industry. Therefore, Staff believes the 25 basis point difference is reasonable given Staff's consideration of a higher growth rate for the water utility industry. Because it's impossible to precisely measure the cost of equity, Staff recommends the Commission authorize a ROE for MAWC that is 25 basis points below the 9.5% ROE recently allowed for KCPL.

**J. Conclusion**

A just and reasonable rate is one that is fair to the investors and fair to the ratepayers. Fairness to the ratepayers means rates that are not one penny more than is necessary to be fair to the shareholders. Fairness to the shareholders means rates that will produce revenues, on an annual basis, sufficient to cover MAWC's prudent cost of service, which includes an allowed ROR. In light of the recent Commission decision, Staff's market evaluation points to an allowed ROE in the range of 8.50% to 9.50% as fair and reasonable for MAWC.

Considering the above analysis, Staff recommends the Commission authorize a ROE of 9.25%.

An allowed ROE range of 8.50% to 9.50% results in an allowed ROR range of 6.53% to 6.97% (*see* Schedule 17). Using the point recommended allowed ROE of 9.25%, results in an allowed ROR of 6.86%. This was calculated by applying an embedded cost of long-term debt of 5.35%, embedded cost of preferred stock of 8.67%, an average cost of short-term debt of 0.99% and an allowed return on common equity of 9.25% to a capital structure consisting of 43.99% common equity, 0.09% preferred stock common equity, 4.91% short-term debt and 51.02% long-term debt. Although this is above what Staff estimates to be the cost of equity to be in the current capital market environment, this allowed ROE is fair and reasonable considering the recent allowed ROE the Commission authorized KCPL.

*Staff Expert/Witness: Jeffrey Smith*

# VI. Rate Base

## A. Plant in Service and Depreciation Reserve

### 1. Plant in Service

Accounting Schedule 3, Plant in Service, reflects the value of MAWC's plant in service for the test year ending December 31, 2016, updated through June 30, 2017. Staff will incorporate plant additions and retirements that have occurred beyond the test year through the agreed true-up period cut-off date of December 31, 2017. Since the last rate case, MAWC has made following acquisitions of small water and sewer companies: Benton County Sewer, Jaxson Estates Water and Sewer, Hickory Hills Water and Sewer, and Wardsville Water and Sewer. Staff has thoroughly analyzed each acquisition to determine the proper amount of rate base (plant, depreciation, reserve, and CIAC) to include in this case. The balances provided in response to DR No. 0157 for Wardsville Water and Sewer were higher than what was provided to Staff in the acquisition Case No. WA-2017-0181. MAWC did not provide any additional documentation to verify the additional plant. Staff made adjustments to the remove the additional plant. Staff's calculation for the total plant in service is $2,279,638,701.

*Staff Expert/Witness: Amanda C. McMellen*

### 2. Depreciation Reserve

The accumulated depreciation reserve represents the sum of all depreciation accruals, net of cost of removal and salvage, which has been recorded on plant placed in service. The value of the accumulated depreciation attributed to MAWC's plant in service will be netted with the total plant in service amount for the purpose of determining rate base.

Accounting Schedule 4, Depreciation Reserve, reflects the adjusted rate base value of MAWC's depreciation reserve for each district as of June 30, 2017, by account. The plant in service for each district includes allocated corporate plant as discussed above. The depreciation reserve for each district also includes allocated corporate accumulated depreciation.

Staff recommends that adjustments be made in certain districts for land accounts in which the Company had reported depreciation reserve. As land is not a depreciable asset, Staff made adjustments of $657 for water and $27 for sewer to remove these reserve amounts.

The balances provided in response to DR No. 0157 for Wardsville Water and Sewer were higher than what was provided to Staff in the acquisition Case No. WA-2017-0181. MAWC did not provide any additional documentation to verify the additional plant. Staff made adjustments to remove the additional plant and associated reserve.

*Staff Expert/Witness: Amanda C. McMellen*

## B. Contributions in Aid of Construction

Contributions in Aid of Construction (CIAC) include all developer-donated plant or any other plant received by the utility at zero cost. CIAC could also include funds received from the developers for the right to hook up to the system in the form of a tariffed CIAC charge. CIAC carries no obligation for MAWC to repay or refund the money to developers or customers. Staff has reflected the CIAC and CIAC Amortization balances in the amounts of $336,159,696 and $82,432,363, respectively, on Accounting Schedule 2, Rate Base, as of June 30, 2017, for all of MAWC's districts, including the systems acquired since the last rate case. For Woodland Manor, Staff has reflected the CIAC balance as reported in its 2015 Annual Report. For EMC of St. Charles County, LLC (Jaxson Estates Wastewater), Staff has included the CIAC and CIAC Reserve balances matching plant in service and depreciation reserve balances since this plant was fully contributed by the developer, a treatment which is consistent with the balances reported in the 2015 Annual Report for this system.

*Staff Expert/Witness: Amanda C. McMellen*

### C. Prepayments

Prepayments are payments made in advance of the period for which a utility receives a benefit from the purchased good or service and typically relate to expenses such as leases, insurance, income taxes, and other taxes. Prepaid amounts require use of investors' funds and, accordingly, are included in rate base. Staff used a thirteen-month average from June 2016 thru June 2017 to show a trend of prepayment balances for inclusion as an addition to rate base. The amount calculated is $2,338,274. The company did not include prepayments in their workpaper.

*Staff Expert/Witness: Ali Arabian*

### D. Materials and Supplies

MAWC maintains an inventory of materials and supplies that are used in the construction, operation, and maintenance of utility plant, but are not directly assignable to specific plant accounts. For the purpose of setting rates, these items should be included in the calculation of rate base because they are typically purchased with investors' funds. Staff used a thirteen-month average from June 2016 thru June 2017 to show a trend of materials and supplies inventory level for inclusion as an addition to rate base. Staff determined the balance of materials and supplies that existed at the end of the test year to be $5,254,895.

*Staff Expert/Witness: Ali Arabian*

### E. Other Post Employment Benefit Costs (OPEB's)

#### 1. Pension/OPEB Tracker

Staff, MAWC and other parties entered into a Non-unanimous Revenue Requirement Stipulation and Agreement in Case No. WR-2015-0301 that addressed the ongoing ratemaking treatment for qualified pension costs (FAS 87) and Other Post Retirement Benefit (OPEB) costs (FAS 106). This agreement authorized MAWC to use an accounting mechanism (tracker) that would track the difference between the amount of pension expense and OPEB expense included in MAWC's rates and the amounts funded by MAWC. Consistent with this agreement, the difference between the annual pension and OPEB expense incurred by MAWC and the amount of pension and OPEB expense included in rates, as accumulated in the tracker, have been included in rate base and will be amortized over period of five years as a reduction to pension and OPEB expense. Staff's pension tracker balance as

of June 30, 2017 is a liability of $4,545,603 and the OPEB tracker balance as of the same date is a liability of $6,378,144.

MAWC's accrued pension asset as of June 30, 2017 is $11,599,634. This amount is included in rate base in Staff's cost of service. This total represents the amount of pension funding MAWC has made to date in excess of its minimum Employee Retirement Income Security Act of 1974 (ERISA) requirement. The prior Non-unanimous Revenue Requirement Stipulation and Agreement allows MAWC to fund additional pension amounts above the minimum ERISA level under certain conditions.

Staff will update the pension and OPEB tracker and accrued pension asset balances as of December 31, 2017 during its true-up filing.

*Staff Expert/Witness: Kimberly K. Bolin*

### F. Customer Advances

Customer advances are funds provided by individual MAWC customers to assist in the cost of constructing and extending mains to facilitate the provision of water and/or sewer service to them. No interest is paid to customers for the use of these funds and, accordingly, represents interest-free money to MAWC. Since MAWC has already been reimbursed for the plant items associated with any construction and/or extension, it should not receive a return on these items. Therefore, it is appropriate to include the accumulated total of these funds as an offset to rate base. Staff determined the balance of customer advances that existed at the end of the update period to be $23,687,085. As a part of the true-up audit, Staff will use the customer advance balances as of December 31, 2017 in this case. The balance determined by Staff will be included as an offset to rate base.

*Staff Expert/Witness: Ali Arabian*

### G. Cash Working Capital (CWC)

Cash Working Capital (CWC) is a rate base component that represents a measurement of the amount of funds, on average, required for the payment of a utility's day-to-day expenses, as well as an identification of whether a utility's customers or its shareholders are responsible for providing these funds in the aggregate. If, on average, a utility has the funds to pay an expense necessary to the provision of service before customers provide payment to the utility, it is the shareholders who are the source of funding, indicating a requisite increase

to the rate base. Alternatively, if, on average, the utility pays expenses necessary for the provision of service only after receiving payments from customers, the ratepayers have provided the requisite funding to pay day-to-day expenses before payment is required on the expenses. Ratepayers are compensated for this funding through a reduction to rate base.

To determine the necessary amount of CWC to be included in the calculation of rate base, a lead/lag study is normally performed. In regard to revenues, a lead/lag study analyzes the timing differences between when the utility provides a customer with service, when a utility generates a bill, and when the utility receives revenue for the service it provides. This overall "revenue lag" is divided into service, billing, and collections lag components. The lead/lag study analysis also involves calculation of the lags from when a good or service is provided to the utility and when the utility pays the invoice for the goods and services, which is called an "expense lag." To determine the amount of CWC to be included in rate base, each expense lag is subtracted from the revenue lag, which provides a net lag. In Staff's calculation of CWC, the net lag is multiplied against an annualized level of each expense, providing a cash requirement for each expense lag. The resulting net total of these cash requirements will either be positive or negative. A positive CWC requirement indicates that, in the aggregate, the shareholders provided the working capital needs during the test year. A negative CWC requirement indicates that, in the aggregate, the ratepayers provided the needed working capital during the test year and paid for the related water and/or sewer expenses before receiving service from MAWC.

In this rate case proceeding, Staff did not conduct a full lead/lag study to determine the CWC requirement, but MAWC performed such a study internally and provided the study for Staff's review in response to DR No. 0129. For purposes of this rate proceeding, Staff has accepted some elements of MAWC's lead/lag study, but made adjustments to other lead/lag components for the reasons discussed below.

Staff utilized the study data to calculate the revenue and expense lags for St. Louis, while combining all other districts. Staff is presenting two separate CWC analyses due to the fact that St. Louis utilizes quarterly billing while all other districts utilize monthly billing.

Staff has made the following adjustments to MAWC's expense lead/lag calculations:

- The expense lags for long-term and short-term debt have been combined into a single expense lag under 'interest expense.'

- The expense lags for federal income tax and state income tax have been combined into a single expense lag under 'income tax.' The "from" and "thru" dates have been changed from "1/1/2016 – 12/31/2016" to the respective quarters which each individual tax payment is for. This changed the average lag from -15.5 to 76.51

- The expense lags for pensions and OPEBs have been combined into a single expense lag under 'Pensions & OPEBs.'

Preferred stock dividend payments were not included in the expense lag calculations; the capital structure calculations take preferred stock payments under consideration in the ratemaking process. The payment of preferred stock is a benefit purely obtained by shareholders and should not affect ratepayer rates.

Staff has chosen to not accept the "check clearing" or "check float" lags added by MAWC. The funds for the checks deposited into the bank should be available immediately. There may be a small percentage that will be found not to be legitimate or have insufficient funds. However, this would not apply to 100% of the deposited checks so it should not be applied in such a way.

Finally, Staff has chosen to use its "miscellaneous cash vouchers" lag calculation to apply to MAWC's Service Company expenses, instead of using the specific lag calculated for this expense item by MAWC. Since Case No. WR-2003-0500, Staff has taken issue with the Service Company requiring prepayment from MAWC of invoices paid to the Service Company; this results in MAWC incurring costs prior to the its receipt of any benefit of the related services. The vast majority of the goods and services that MAWC receives from unaffiliated vendors are paid by MAWC in "arrears;" i.e., after the goods and services are received. Staff believes that the requirement that MAWC prepay amounts due to the Service Company is solely a result of the affiliated relationship of MAWC to the Service Company. Staff continues to disagree with MAWC's request for a "negative" expense lag to be reflected in its CWC allowance for Service Company expenses, as it would result in MAWC's customers paying a higher return on rate base than would be required under normal business billing practices.

*Staff Expert/Witness: Caroline Newkirk*

### H. Tank Painting Tracker

The tank painting tracker was established in the *Non-Unanimous Stipulation and Agreement* approved by the Commission as part of MAWC rate case, Case No. WR-2007-0216 and was continued through subsequent agreements approved by the Commission in MAWC's next three rate cases: Case Nos. WR-2008-0311, WR-2010-0131, and WR-2011-0337. The tracker was discontinued in the last MAWC rate case (WR-2015-0301) with a five-year amortization of the remaining balance to start on the effective date of rates for that case.

In MAWC's last rate case, the existing regulatory asset balance (rate base) was set at $1,382,938 as of January 31, 2016. As of June 30, 2017, the existing tracker has resulted in a regulatory asset balance of $1,106,350; however, the period from February 1, 2016, through July 28, 2016, (the stub period, or the period between the cut-off date in the last rate case and the point when new rates from that rate case went into effect) has resulted in a further decrease to rate base of $445,990. Therefore, the overall regulatory asset is $660,360 as of June 30, 2017. Staff proposes an adjustment to amortize the current regulatory asset balance of $660,360 over a four-year period ($165,090 annually), and to include the unamortized balance of the regulatory asset in rate base.

*Staff Expert/Witness: Ashley Sarver*

### I. Accumulated Deferred Income Taxes (ADIT)

Staff has included the ADIT balance as of June 30, 2017, in the amount of $340,235,609 in rate base.

The ADIT balance in Staff's rate base includes an offset for a "net operating loss" (NOL) deferred tax asset. An NOL arises when a taxpayer can claim a greater amount of current tax deductions than the amount of the taxpayer's current taxable income. NOLs can be applied against past tax payments or can be used to offset future tax liabilities. In recent years, some major utilities in Missouri have recorded NOLs, including MAWC, primarily because of large capital expenditures and the availability of additional "bonus depreciation" tax deductions. For ratemaking purposes, the impact of NOL deferred tax assets is to reduce the amount of net ADIT that is included as a reduction to rate base. As of the date of this filing, Staff is continuing to examine how the NOL deferred tax asset was calculated by MAWC, to verify that it is appropriate to include the full amount of this item in rate base.

See Section VIII.G. Current and Deferred Income Tax for a detailed discussion on deferred income taxes.

*Staff Expert/Witness: Keith D. Foster*

# VII. Allocations and Service Company Costs

## A. Corporate Allocations

Headquartered in Voorhees, New Jersey, American Water Works Company, Inc. ("American Water" or "AWWC") and its subsidiaries (or affiliates) serve approximately 15 million customers in 47 states, the District of Columbia, and Ontario, Canada. American Water performs many functions and activities on a consolidated or centralized basis for many of its regulated and unregulated subsidiaries. These consolidated or centralized functions are carried out for the American Water-owned subsidiaries by American Water's wholly-owned subsidiary American Water Works Service Company, Inc. ("Service Company"). Through a process of direct assignment and allocation, Service Company employees' time and all other related costs are ultimately charged to the American Water-owned utility subsidiaries receiving service. In addition to the Service Company, American Water Capital Corporation (AWCC) was created to provide a single source of long- and short-term debt capital for American Water and its utility subsidiaries. Service agreements exist between MAWC and both the Service Company and AWCC.

In addition to MAWC, the following subsidiaries or affiliated entities currently receive direct or allocated charges from the Service Company:

***Regulated Entities***

| | |
|---|---|
| California-American Water Company | Michigan-American Water Company |
| Hawaii-American Water Company | New Jersey-American Water Company |
| Illinois-American Water Company | New York-American Water Company |
| Indiana-American Water Company | Pennsylvania-American Water Company |
| Iowa-American Water Company | Tennessee-American Water Company[72] |
| Kentucky-American Water Company | Virginia-American Water Company |
| Maryland-American Water Company | West Virginia-American Water Company |

[72] Tennessee American also serves customers that are located in northern Georgia.

***Unregulated Entities***

| | |
|---|---|
| Contract Services Group | American Water Resources |
| Military Services Group | Laurel Oak Properties |
| Homeowner Services Group | American Water Works Service Company |
| Terratec Environmental Ltd. | American Water Capital Corporation |
| Keystone Clearwater Solutions | AWI, Inc. |

Services performed by the Service Company are grouped into various costs centers, depending on the services provided.

The Service Company allocates expenses to the American Water subsidiaries. The Service Company's Billing and Accounting Manual (BAM) identifies the Service Company accounting categories by transaction type as follows: labor, expenses, assets, and overhead. The Service Company employees charge their time and expenses to each one of the affiliate companies either directly or indirectly. The Service Company employees provide information to the Service Company to assign expenses to affiliates. Such information includes the affiliate company number (if transaction is a direct charge) or a formula number, known as a Work Breakdown Structure (WBS) element (if transaction is allocated), the number of hours the employee worked, and the appropriate amount of non-labor charges. This method allows for direct charges to both regulated and non-regulated entities when the employee can clearly identify the hours spent providing service to a specific affiliate.

American Water uses a methodology that allocates costs to both its regulated and non-regulated affiliates. When it is not practical for a Service Company employee to directly charge a given affiliate the actual time spent on a task, employees log their hours on a time sheet that includes various allocation billing formulae. The billing formula charges either whole or partial hours among the regulated and non-regulated American Water subsidiaries.

When a Service Company employee provides services that benefit both regulated and non-regulated entities, the employee chooses a "Tier One Factor" formula to allocate the charges to both regulated and non-regulated entities.

An employee who only performs services for regulated affiliates uses a "Tier Two Factor" formula that is primarily based on the number of customers for a given regulated

subsidiary. An employee providing services to non-regulated affiliates only charges his or her time "directly" to that affiliate.

Tier One Factor formulas rely on various criteria, including: revenues, employees, plant investment, and others. Some of the formulas are derived from a combination of several of these criteria, while others consider only one criterion such as the number of employees. The Service Company employee then chooses the formula that matches the service provided. For example, employees in payroll choose a formula based on the number of employees.

Divisional cost centers can charge other affiliates for costs incurred. This type of charge occurs if a particular divisional office has given expertise that is lacking in another division. An employee from that divisional office may perform tasks for other divisional offices, and directly charge his or her time to the corresponding division. For example, if a plant project is under construction by Maryland-American Water Company in the Mid-Atlantic Division, but the only engineer familiar with that type of plant is located in the Missouri-American Division, he or she may provide services to Maryland-American Water Company and charge his or her time directly to that entity.

Based upon the information provided by MAWC, Staff has not proposed any changes to American Water's method for allocating Service Company expenses to MAWC. However, other Staff witnesses have recommended adjustments to some Service Company costs allocated to MAWC, which are addressed in their sections of this report.

*Staff Expert/Witness: Keith D. Foster*

### B. District Allocations

MAWC is currently composed of three different water operating districts and two different sewer operating districts, with each district consisting of one or more service areas. Although the Company only recognizes two sewer operating districts, for this case Staff allocated costs to each sewer service area, for a total of sixteen (16) sewer service areas. To determine district specific revenue requirements, all corporate rate base, revenues, and expenses must be allocated among these districts using different allocation factors. The Company has proposed allocating its corporate costs between these districts based upon either the number of customers or the number of service orders for each district. In the prior rate case (Case No. WR-2015-0301) both MAWC and Staff used twelve different allocation factors to allocate these corporate costs. Each allocation factor depended upon the causes that

required the costs to be incurred. Staff has taken the same approach in this rate case, and has recommended that these costs be allocated across the districts using the same allocation factors as used by both parties in the prior rate case.

*Staff Expert/Witness: Keith D. Foster*

# VIII. Income Statement

## A. Revenues

### 1. Introduction

The largest component of operating revenues results from rates charged to MAWC's metered and unmetered water and sewer service customers. A comparison of operating revenues with cost of service is fundamentally a test of the adequacy of the currently effective rates. If the overall cost of providing service to customers exceeds operating revenues, an increase in the current rates MAWC charges its metered and unmetered customers is required.

One of the major tasks in a rate case is not only to determine whether a deficiency (or surplus) between cost of service and operating revenues exists, but also to determine the magnitude of any such deficiency (or surplus). Any deficiency (or surplus) identified can only be addressed by adjusting Missouri retail rates (i.e., rate revenues) prospectively, on a going-forward basis.

### 2. The Development of Rate Revenue in this Case

The objective of this section is to explain Staff's determination of annualized, normalized test year usage and revenues by rate class.

The intent of Staff's adjustments to test year Missouri usage and rate revenues is to determine the level of revenue the Company would have collected annually, based on information "known and measurable" at the end of the test year (in this case, updated through June 30, 2017).

*Staff Expert/Witness: Ashley Sarver*

## 3. Regulatory Adjustments to Test Year Sales and Rate Revenue

### a. Normalization of Customer Water Usage

Calculating annualized revenues, is one of the key components in determining if an increase in rates is appropriate. The method Staff will utilize in determining annual revenues will be explained in detail by Staff witness, Ashley Sarver.

One aspect investigated in determining annual revenues is customer usage. In this rate case, Staff gathered information related to residential customer usage on a per day basis, within specific MAWC systems, and/or an entire District, where MAWC provides metered water service. The following four service areas were excluded from this investigation as they do not have metered rates: Anna Meadows; Jaxson Estates; Rankin Acres, and White Branch.

Staff reviewed historical data provided in MAWC responses to Staff DR Nos. 0026, 0035.1, 0076, and the submitted workpaper, MO Average Use 2007-2016 Workpaper. These data requests provided Staff with monthly customer usage per service territory (DR Nos. 0035.1; 0076 - attachment 2, and MO Average Use 2007-2016 Workpaper), and with monthly customer counts per service territory (DR Nos. 0026; DR Nos. 0035.1; 0076 - attachment 2, and MO Average Use 2007-2016 Workpaper). Staff determined that the most reasonable method to determine annual customer usage was to use a five-year average of usage for the period July 2012 – June 2017. In certain service territories, MAWC did not have five years of data so Staff used an average of the available data provided.

The method employed by Staff uses actual data to support a normalized level of usage. Averaging the data over the most recent five-year period represents both up-to-date data and considers recent trends in customer usage. Many factors, such as more efficient appliances, conservation, lawn sprinkling/irrigation, ambient temperature, and moisture levels affect water usage. The effect of these factors change over time; therefore, using the most recent five years of data provides for a balanced determination of customers' usage habits. Furthermore, Staff uses each service area's unique data because the usage characteristics of each service territory are different from other service territories.

Based on Staff's determination of customer usage per day, Staff witness Sarver calculated an annual amount of revenues and the appropriate commodity rates.

Staff's recommended usage per customer for the residential customers by service area is attached to this Report as Appendix 3, Schedule JJR-d1.

*Staff Expert/Witness: Jarrod J. Robertson*

**b. Revenues Annualization**

**Water Annualization**

Staff's annualized water revenues for each of the Company's operating districts is the sum of the minimum charge revenues and the volumetric charge revenues at the currently approved tariff rates. The difference between these revenues and those billed during the test year provided the amount for the revenue adjustment.

Staff developed the minimum charge revenues by first multiplying the number of customers (or meters) as of June 30, 2017, for each meter class by the applicable minimum charge as approved in Case No. WR-2015-0301, the Company's last general rate proceeding. The product of the number of customers (or meters) multiplied by the applicable minimum charge was then multiplied by the number of billing periods in a year, four for quarterly customers and twelve for monthly billed customers, to produce the annualized minimum charge revenues for each customer class.

Staff developed the annualized and normalized volumetric (consumption) charge revenues based on a normalized usage applied at the current volumetric rate per gallons. Staff witness Jarrod J. Robertson, of the Commission's Water and Sewer Department, developed and provided the normalized average gallons of usage per customer per day for residential customers for all operating districts. For Wardsville water usage, Staff used Jefferson City water average gallons used per customer per day. Staff multiplied the average gallons of usage per customer per day by the average days per year (365.25) and the number of customers, to determine the total annual usage or consumption.

For commercial, industrial, and other public authority (OPA) customers' water usage, Staff determined the customer usage based on Rate A (meter rate for residential, commercial, and small industrial customers) or Rate J (for manufacturers and large quantity users of water) as of June 30, 2017. Once Staff determined the appropriate usage for Rate A and Rate J, a percentage allocation factor was calculated based on the overall usage split between Rate A and Rate J. Staff applied the percentage allocation factor to a five-year average for the consumption usage ending June 30, 2017 to determine the Rate A and Rate J usage for the

five-year period. The total normalized usage or consumption was then multiplied by the applicable tariff rate per 1,000 gallons for each district to determine the normalized revenues.

For the Sale for Resale (Other Water Utilities) revenues, Staff used a five-year average to normalize usage or consumption. The usage was multiplied by the applicable tariff rate per 1,000 gallons for each district to determine the normalized revenues. MAWC has special contracts with the City of Kirkwood, Public Water Supply District (PWSD) #C-1 Jefferson, and Chariton County Water District #2. Staff used a five-year average for the City of Kirkwood and PWSD #C-1 Jefferson and a three-year average for Chariton County Water District #2. The total normalized usage or consumption was then multiplied by the applicable tariff rate per 1,000 gallons for each district, to determine the normalized volumetric revenues.

MAWC has two special retail sales contract rates: one for The Empire District Electric Company and another for Triumph Foods. Staff determined the appropriate level of usage for each of these customers is the actual 12 months usage ending June 30, 2017.

*Staff Expert/Witness: Ashley Sarver*

**Sewer Revenues Annualization**

Staff developed the minimum sewer charge revenues by first multiplying the number of customers or meters as of June 30, 2017, to each customer or meter class by the applicable minimum charge as approved in Case No. WR-2015-0301, the Company's last general rate proceeding. Staff developed the annualized and normalized commodity (consumption usage) charge based on a normalized usage applied to the current usage rate (commodity charge) per 1,000 gallons.

Staff developed the sewer usage for residential, commercial, and other public authority (OPA) customers, based on the average gallons of sewer usage per system per year by using either a five-year average or less, depending on the number years of data available. For the sewer commodity charge usage, Staff relied on the Company's split between the gallons included in the base charge and commodity charge during the test year to calculate a percentage allocation factor for each system to determine the average gallons for the commodity charge. For Wardsville residential waste water, Staff used the assumed usage of 1,200 per month until a winter average period has been established set in the tariff; and for Emerald Pointe waste water, Staff used the actual usage for the 12 months ending

September 2017. Staff then applied the current usage rate (commodity charge) per 1,000 gallons.

MAWC provides Metal Container Corporation a discount for commercial waste water in the Arnold district. Metal Container Corporation receives a 15% discount based upon the amount of water used as agreed with the City of Arnold. Staff normalized the usage using the 12-month period ending June 30, 2017.

*Staff Expert/Witness: Ashley Sarver*

**c. Other Revenues**

**Private Fire Revenue**

Staff developed the minimum charge revenues by first multiplying the number of customers (or hydrants or meters) as of June 30, 2017, to each hydrant or meter class by the applicable minimum charge as approved in Case No. WR-2015-0301, the Company's last general rate case. Staff used the actual usage as of 12 months ending June 30, 2017. The total normalized usage or consumption was then multiplied by the applicable tariff rate per 1,000 gallons for each district to determine the normalized revenue.

**Other Miscellaneous Revenues**

Staff eliminated all unbilled revenues booked by the Company within the test year in its revenue annualization computation. This ensures that only 365 days of revenue is included in the revenue annualization calculation and that revenues are stated on an "as billed" basis. Unbilled revenue on the books of the Company recognized water sales that have occurred, but have not yet been billed to the customer. Therefore, it is necessary for Staff to remove unbilled revenues to reach an accurate revenue requirement based upon water sales billed to, and revenues collected from, Missouri ratepayers.

**Other Operating Revenues**

MAWC's other revenues categories include funds received for the following items: late payment charges, rents, collection for others, non-sufficient funds check charges, application/initiation fees, the provision of usage data to other entities, reconnection fees, frozen meter fees, after hours charges, and miscellaneous service. During its audit, Staff noticed the revenues for these categories were not recorded to the correct districts so Staff applied an adjustment to recognize the revenues in the right districts. Staff reviewed the totals for each of these revenue categories for the most recent three-year period. Based upon this

review, Staff determined a three-year average was most representative as a going forward level of revenue for all but three of these categories. For two of the categories, rents and the provision of usage data to other entities, Staff used the actual revenues for the twelve months ending June 30, 2017. For the third category, Staff removed the revenues for late payment charges because MAWC converted Tri-States and Emerald Pointe into the Customer Billing System so no late fee payment has been applied since July 2016.

*Staff Expert/Witness: Ashley Sarver*

#### d. Revenues: Conclusion

Staff's calculation of the revenues for MAWC water is $287,898,855, and for sewer is $8,734,822.

*Staff Expert/Witness: Ashley Sarver*

### B. Depreciation

#### 1. Recommendation

In 2016, the Commission ordered a depreciation rate schedule for MAWC in Case No. WR-2015-0301.[73] Staff recommends that the Commission order MAWC to continue to use these depreciation rates. A copy of the depreciation rate schedule is attached as Appendix 3, Schedules KBP-d1 and KBP-d2.

*Staff Expert/Witness: Keenan B. Patterson, PE*

#### 2. Capitalized Depreciation

Expenses related to construction are accumulated in construction-work-in-progress accounts, and are only eligible to be included in rates subsequent to the completion of the project. The capitalized expenses include depreciation expense associated with assets used in construction such as power operated equipment and transportation equipment. Capitalized depreciation expenses must be subtracted from the depreciation expense calculated using MAWC's total plant-in-service balances in order to prevent double recovery. After receiving the response to Staff DR No. 0159 and further discussion with the Company, Staff discovered that MAWC is not currently keeping track of the amount of time these assets are being used for construction vs. expense. Therefore, Staff deducted capitalized depreciation from its total

[73] *Order Approving Non-Unanimous Stipulation Agreement*, Issued April 6, 2016, Case No. WR-2015-0301.

depreciation expense in order to arrive at the amount of depreciation expense associated with operations and maintenance related functions based on the overall capitalization ratio calculated by Staff. This adjustment can be found at Accounting Schedule 10, Adjustments to Income Statement Detail.

*Staff Expert/Witness: Amanda C. McMellen*

## C. Payroll and Benefits

### 1. Payroll and Payroll Taxes

Staff's total annualized and normalized payroll expense for MAWC and AWWSC is based upon the test year amount ending December 31, 2016, adjusted for the following: (a) wage increases; (b) changes in employee levels through June 30, 2017, the end of the update period; (c) a normalization adjustment for MAWC overtime; (d) use of the twelve months ended December 31, 2016, capitalization percentage for MAWC and the Service Company, respectively; and (e) adjustments to remove portions of certain employee salaries and related expenses recommended for disallowance as lobbying expense. These calculations can be found in Accounting Schedule 9 of the Staff Accounting Schedules.

Staff calculated the annualized level of base payroll for MAWC on an individual basis using the known hourly wage or salary rate as of June 30, 2017. Staff went beyond the test year update period to include contractual raises for Union employees in effect prior to December 31, 2017. Staff used the employee levels that existed at June 30, 2017, to complete its annualization for MAWC employees.

Staff annualized the Service Company payroll based upon employee counts and salaries in effect as of June 30, 2017. Staff then applied the average percentage of time charged to MAWC by each employee in order to determine the appropriate allocation of AWWSC payroll to MAWC.

Staff normalized the test year levels of overtime for each MAWC district using a three-year average of overtime incurred. Staff calculated its normalization of overtime by developing a ratio of overtime dollars to straight time payroll dollars and then multiplied this result by Staff's annualized base payroll. The level of overtime allocated from the Service Company to MAWC during the test year appeared reasonable; therefore, Staff does not propose an adjustment to Service Company allocated overtime at this time.

All payroll and payroll related expenses reflect the current MAWC and Service Company O&M payroll charge percentages through December 31, 2016, to its total adjusted payroll expense to calculate the expensed amount of payroll. After allocation between expense and construction (O&M expense ratio), Staff's adjustment for payroll was distributed for each Uniform System of Accounts (USOA) account, based upon the actual distribution experienced by MAWC through December 31, 2016. Staff's calculation for total payroll is $46,739,790.

Staff calculated annualized payroll taxes for both MAWC and AWWSC by multiplying the annualized level of payroll and the portion of incentive compensation allowed for non-financial incentive payments by the most recent Federal Insurance Contribution Act (FICA), FICA Medicare, Federal Unemployment Tax Act (FUTA), and State Unemployment Tax Act (SUTA) payroll tax rates. Staff's calculation for payroll taxes is $3,234,823.

Staff made an adjustment to exclude salaries related to lobbying activities. There are four MAWC and three Service Company employees actively engaged in lobbying activities throughout the test year ending December 31, 2016. Staff has removed the corresponding amounts of salary, benefits, and payroll taxes related to each employee's lobbying-related activities.

*Staff Expert/Witness: Jennifer K. Grisham*

**2. Incentive Compensation**

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Historically, Staff has recommended the removal of incentive compensation awards tied to company financial performance; no connection has been found between the financial results for which incentives are awarded and tangible benefits to ratepayers. Staff uses the criteria established in the Commission's Report and Order for ***In re Union Electric Co.,*** Case No. EC-87-114: "At a minimum, an acceptable management performance plan should contain goals that improve existing performance, and benefits of the plan should be ascertainable and reasonably related to the plan." 29 Mo. P.S.C. (N.S.) 313, 325 (1987). Furthermore, in the Report and Order in Case No. TC-89-14 et al., ***In re Southwestern Bell Telephone Company (SWB),*** the Commission stated:

> In the Commission's opinion the results of the parent corporation, unregulated subsidiaries, and non-Missouri portions of SWB, are only remotely related to the quality of service or the performance of SWB in the state of Missouri. Achieving the goals of SBC [the parent company] and unregulated subsidiaries is too remote to be a justifiable cost of service for Missouri ratepayers. Accordingly, the Staff's proposed disallowances in the senior management's long term and short-term incentive plans…should be adopted.

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Additionally, Staff has made an adjustment to remove a similar percentage of the capitalized portion of the Service Company APP and LTPP from the plant-in-service and depreciation reserve balances from November 1, 2015, through June 30, 2017. Staff made this adjustment to remain consistent with the position that none of the incentive compensation costs relating to EPS should be borne by ratepayers. Since Staff was unable to allocate the total amount to specific plant accounts, Staff applied a composite depreciation rate based on the rates used in the current case to calculate the related accumulated depreciation amount

associated with capitalized incentive compensation costs. Staff's calculation for APP is $690,049. Staff will also continue to review this issue through December 31, 2017, as part of its true-up audit.

*Staff Expert/Witness: Jennifer K. Grisham*

### 3. Employee Benefits other than Pensions and OPEBs

MAWC and Service Company offer several benefits to their employees, including a 401(k) employer match, Employee Stock Purchase Plan (ESPP), and various types of insurance (medical, dental, vision, etc.). For each MAWC and Service Company employee, Staff annualized the benefits on an employee-by-employee basis for both MAWC and the Service Company, with the exception of the ESPP. Staff recommends disallowing recovery of the booked expense associated with ESPP, as there is no cash outlay for this item. Staff's calculation for total employee benefits other than pensions and OPEBs is $9,074,799. Staff will analyze employee levels along with each category of actual benefit cost data through December 31, 2017, as part of its true-up audit. An adjustment to remove a percentage of the benefits of certain employees as a lobbying expense is discussed within the Payroll and Payroll Taxes section of this Report.

*Staff Expert/Witness: Jennifer K. Grisham*

### 4. FAS 87 Pension Costs

Financial Accounting Standards Board's (FASB) Accounting Standards Codification (ASC) Subtopic 715-30, formerly known as FAS 87, is an accrual accounting method for pension expense required by the accounting profession under Generally Accepted Accounting Procedures (GAAP) for financial reporting purposes. Under FAS 87 a company accrues (expenses) for employee's earned pension benefits over the service life of the employee. The total obligation to the employee for pension benefits is accumulated annually until retirement in the Accumulated Benefit Obligation (ABO). Both financial statement expense recognition under FAS 87 and the funding requirements under the Employee Retirement Income Security Act of 1974 (ERISA) are based upon the same pension plan obligation to employees enrolled in the plan. ERISA is a federal United States tax and labor law that establishes minimum standards for pension plans in private industry. While different assumptions are used for the timing of pension cost recognition during the service life of the employee under FAS 87 and

ERISA, both FAS 87 and ERISA are intended to address the same total ABO by the employee's retirement date.

Staff, MAWC and other parties entered into a Unanimous Stipulation and Agreement in Case No. WR-2008-0311 and subsequent rate cases including Case Nos. WR-2010-0131, WR-2011-0337 and WR-2015-0301, that addressed the ongoing ratemaking treatment for annual qualified pension costs. These prior agreements call for MAWC's pension cost rate recovery to be based upon MAWC's ongoing pension expense used in setting rates and pension expense based on ERISA minimums required for MAWC. MAWC is also required to defer the difference on their books between the annual minimum ERISA contribution amount and their annual FAS 87 expense calculation. Further, MAWC is required to track the difference between its annual minimum ERISA amount and the level included in MAWC's rates. In this rate proceeding, the difference between the annual pension cost and the amount included in rates, as accumulated in the tracker has been included in rate base as a liability and amortized over a period of five years as a reduction to pension expense.

Staff has calculated the ongoing allocated minimum ERISA amount or pension expense in the amount of $3,132,211 (after application of the operating and maintenance percentage). Staff's pension calculation incorporates MAWC's actuary's calculation of the minimum ERISA amount, as well as the prior tracker balance amortization from MAWC's previous rate case. Staff will be updating the FAS 87 costs and the pension tracker balance in the true-up audit in this proceeding.

*Staff Expert/Witness: Kimberly K. Bolin*

**5. FAS 106 – Other Post-Employment Benefits (OPEBs) Cost**

Other Post-Employment Benefit Costs (OPEBs) are those costs incurred by the Company to provide certain benefits to retirees. These benefits include medical, dental, vision, and life insurance benefits. The Company must determine its OPEBs expenses for rate making purposes based on FASB ACS 715-60 (formerly FAS 106).

In the MAWC rate case, No. WR-2008-0311, and later cases, the Commission addressed the ratemaking treatment for the annual OPEB costs. As with FAS 87, the Commission authorized the rate base inclusion of the difference between the amount of OPEB expense included in rates and the amount funded during the same period that those rates were in effect. The OPEB tracker amount included in rate base as a liability in the Staff' cost of

service calculation in this rate proceeding is consistent with the treatment of this item in the previous rate case, No. WR-2015-0301. Staff calculated the ongoing allocated annual FAS 106 costs in the amount of $467,837. The annual amount of amortization for the OPEB tracker balance from Case No. WR-2015-0301 is $1,275,629, which when included in Staff's OPEB calculation results in a negative OPEB expense in the amount of $807,792. Staff will be updating the FAS 106 costs and the OPEB tracker balance in the true-up audit in this proceeding.

*Staff Expert/Witness: Kimberly K. Bolin*

#### 6. Employee Relocation Expense

MAWC, through its normal course of business, incurs expenses associated with the relocation of its employees. Staff calculated MAWC's relocation expense as $234,120. Staff normalized the relocation expense for MAWC employees, as well as all Service Company allocated relocation expense, based on a three-year average ending December 31, 2016.

*Staff Expert/Witness: Jennifer K. Grisham*

### D. Maintenance Normalization Adjustments

#### 1. Main Break Expense

A main break occurs when a water pipe (main) breaks and/or separates completely, or a leak is detected, which requires a portion of the main to be repaired or replaced. The number of main breaks and the cost associated with repairing these breaks is variable, particularly in the St. Louis County District. As indicated in its response to Staff DR No. 0189, the Company stated it "…has not tracked maintenance expenses unique to main break repairs for any of Missouri's districts other than St. Louis County." Thus, the recommended adjustment is solely for the St. Louis County District.

In the previous rate case (Case No. WR-2015-0301), Staff normalized the number of main breaks and then multiplied that number by the 2014 cost per break due to a trend in declining cost per break from 2011 through 2014. Staff also normalized the number of main breaks per month for January, February, and March 2014 due to the "Polar Vortex" weather phenomenon.

For this rate case, Staff calculated a three-year average for main breaks per month, utilizing the normalized numbers for the three months in 2014 affected by the Polar Vortex.

While there was a trend in declining cost per main break in the previous rate case, there was no such trend from 2014 to 2016, which necessitated utilizing a three-year average for cost per break for the test year. Multiplying the average cost per break by the average number of main breaks resulted in a normalized main break expense of $1,864,642 for the St. Louis County district.

*Staff Expert/Witness: Jennifer K. Grisham*

**2. Tank Painting Expense**

Staff used a five-year average of tank painting and inspection costs on a 12-month basis for the five 12-month periods ending June 30, 2017, to determine a normalized level of $1,462,518 for tank painting and inspection expense to include in the cost of service. The normalized level is $1,279,074. Staff allocated the normalized tank painting and inspection expense and amortization of the tracker regulatory asset by using an allocation factor determined by the square footage of the tanks in each district.

*Staff Expert/Witness: Ashley Sarver*

## E. Other Non-Labor Expenses

### 1. Rate Case Expenses

A utility company incurs various expenses in bringing a rate case before the Commission. Rate case expense includes costs related to securing outside legal counsel and retaining expert consultants, as well as miscellaneous items such as copying costs, travel expenses, and rate case publication costs.

#### a. Normalization

Staff reviewed MAWC's rate case expense attributable to this case for the prudence of all services secured and all costs incurred. Staff calculated a normalized level of the rate case expense MAWC has incurred for the current rate case through June 30, 2017. Staff calculated this normalized level of rate case expense by analyzing the filing dates of MAWC's requests for rate increases since 2003. From the filing of Case No. WR-2003-0500 through the filing of MAWC's current rate case, there has been an average of approximately 30 months between rate case filings. Therefore, Staff recommends that all rate case expense incurred in this rate case be normalized based on this 30-month interval. Staff will continue to review

incurred rate case expense for prudence as the rate case progresses and as MAWC provides new information.

**b. Sharing Recommendation**

In the *Staff Investigative Report on Rate Case Expense* ("Report") filed in Case No. AW-2011-0330 in September 2013, Staff made certain recommendations regarding ongoing rate recovery policies for utility rate case expense. Staff asserted that rate case expense provides a benefit to both utilities and customers. Staff noted that a practice of granting utilities full recovery of incurred rate case expense does not provide the utility with strong incentives to reasonably limit their expenditures in this area. Staff's conclusion was that the application of "structural incentives" to rate case expense recovery should be considered by the Commission in order to acknowledge the dual-beneficiary nature of rate case expense incurrence, alleviate a utility's advantage over other parties in a rate case, and to incentivize a utility to file a case that is easier to process.

The Commission provided specific guidance on this issue in its Report and Order in ***Re: Kansas City Power & Light,*** Case No. ER-2014-0370, which referenced the aforementioned Staff Report. In its decision, on page 72 of Order, the Commission stated the following:

> The Commission finds that in order to set just and reasonable rates under the facts in this case, the Commission will require KCPL shareholders to cover a portion of KCPL's rate case expense. One method to encourage KCPL to limit its rate case expenditures would be to link KCPL's percentage of recovery of rate case expense to the percentage of its rate increase request the Commission finds just and reasonable.[74] The Commission determines that this approach would directly link KCPL's recovery of rate case expense to both the reasonableness of its issue positions and the dollar value sought from customers in this rate case.[75]
>
> The Commission concludes that KCPL should receive rate recovery of its rate case expenses in proportion to the amount of revenue

[74] This method can be expressed as: (Revenue Requirement Approved / Original Revenue Requirement Requested) X 100 = allowable percentage of rate case expense.

[75] It is understood that some of the issues litigated in this case do not directly affect the overall revenue requirement granted by the Commission; but it is clear that the vast majority of the litigated issues do have a direct or indirect impact on the revenue requirement. Accordingly, percentage sharing is a reasonable approach to correlating recovery of rate case expense to the relationship between the amount of litigation that benefited both ratepayers and shareholders and that which benefited only shareholders.

requirement it is granted as a result of this Report and Order, compared to the amount of its revenue requirement rate increase originally requested.

Staff recommends that rate case expense be shared between MAWC ratepayers and shareholders using the option which was ordered by the Commission in the KCPL rate case, Case No. ER-2014-0370. Staff is proposing that rate case expense be shared between ratepayers and shareholders. Staff recommends that ratepayers pay the same percentage of regulatory expense as the percent of the total rate case increase that is ultimately determined to be just and reasonable by the Commission. This sharing mechanism only includes in the cost of service those costs that are reasonable and from which ratepayers receive a benefit; it reduces the Company's significant financial advantage over other participants in the rate case process; and it provides an incentive for the Company to control its costs. Even though no depreciation study was done in this rate case, Staff also recommends that the depreciation study done in WR-2015-0301 be exempt from the application of the recommended sharing percentage and continue to be built into rates as a five year recurring expense. Staff's sharing percentage recommendation could change as Staff continues to evaluate MAWC's request for a future test year.

In the Non-Unanimous Revenue Requirement Stipulation and Agreement ("S&A") filed in Case No. WR-2015-0301 in March 2016, an agreement was reached on certain revenue requirement issues including Rate Case Expense. According to the S&A, "MAWC will recover in rates 50% of its expenditures for this case, amortized over 30 months; however, 100% of the costs associated with PricewaterhouseCoopers ("PwC") audit and Customer Notices will be amortized over 60 months." Due to this agreement on the amortization of prior rate case expense, Staff has calculated the amount of unamortized Rate Case Expense from Case No. WR-2015-0301 as of June 30, 2017, as $42,707, which is included in its total annualized amount of $77,730. If appropriate, Staff may re-calculate the amortization at a later date.

*Staff Expert/Witness: Caroline Newkirk*

**2. PSC Assessment**

The operations of the Public Service Commission are funded by assessments levied upon regulated utility companies. The funding required from each utility is evaluated yearly

and a new assessment is billed on July 1st. These assessments are used to reimburse the Commission for its operating costs. Staff has annualized the PSC assessment expense to reflect the most current assessment issued on July 1, 2017. Staff's annualization calculates the PSC assessment expense at $2,132,599.

*Staff Expert/Witness: Ali Arabian*

**3. Lobbying Expense**

Staff has removed all amounts related to lobbying expenses. It is a long-standing policy of Staff to exclude these costs, as the activities are, in general, to promote the interest of the shareholders. Adjustments were made to remove lobbying expenses incurred by contracted lobbyists hired by MAWC, as well as lobbying performed by hired outside legal counsel. Disallowances also include indirect lobbying amounts paid through organizational dues, as discussed in the Dues and Donations Section of this Report by Staff witness Arabian. Adjustments were also made to lobbying expenses incurred by MAWC employees and Service Company employees, as discussed in the Payroll and Payroll Taxes section. Staff's total for lobbying expense is $108,560. See Payroll and Payroll Taxes for Staff's calculation for total payroll.

*Staff Expert/Witness: Jennifer K. Grisham*

**4. Purchased Water**

Staff annualized purchased water for the St. Louis County, Parkville, Jefferson City, and Spring Valley water service areas. These service areas purchase water from the City of St. Louis, Kansas City Water Services, Callaway County Water District #1, and Ozark Water System, respectively. When demand is higher than what the systems in each of these districts are capable of pumping from their own sources, they must purchase water from a third-party water provider. Staff used the test year usage for each of the districts, except for Parkville. Staff chose to use the Company's proposed usage amount for Parkville because it is building a new plant that will decrease the purchased water for that area. Staff's annualized system delivery for each district is based on a five-year average for each district as well as the current costs in the contracts between MAWC and the water providers listed above. Staff's annualized total amount for purchased water at $592,139.

*Staff Expert/Witness: Ashley Sarver*

**5. Fuel and Power Expense**

The Company's fuel and power expense is composed of electricity, natural gas, and miscellaneous purchased fuel costs. Staff annualized the fuel and power expense for each district based on the current costs and the normalized system delivery. Staff developed a rate for power cost per 1,000 gallons of water for each district. This number is based on current electricity costs during the test year for each individual sewer system. If a system did not have 12-months of data, Staff annualized using the 12-months ending June 30, 2017. Using this value, Staff applied it to the annualized system delivery to calculate the annualized cost of fuel and power expense for each district. This value also takes into consideration the normalized water loss that occurred at each district. Staff's annualized level for fuel and power expense is $12,969,600.

*Staff Expert/Witness: Ashley Sarver*

**6. Chemical Expense**

Staff based normalized chemical expense for each district on multiple factors. Staff annualized the level of chemical expense by using the current price for each type of chemical and, depending on the number of years of data available, applied this to a two to five year average level of chemical usage used in the water treatment process where the usage fluctuated upward or downward from year to year. Staff used the 12-months ending June 30, 2017 chemical usage for some districts where a discernable upward or downward trend was exhibited in the year-to-year level of chemicals usage. Staff then determined the cost of chemicals for every 1,000 gallons of water. Staff applied this value to the adjusted system delivery factor to calculate the annualized level of chemical expense for each district.

Staff based an adjusted system delivery factor on system delivery after annualized water loss. System delivery is the amount of water that was pumped for each system. This total includes all water sold to the customers including export to wholesale customers or other MAWC systems, as well as any water lost due to leaks, broken pipes, theft or unauthorized use, unmetered authorized use, or other unaccounted for water. Staff used a five-year average, or an average of the available data that represented a full 12 months for each year for all districts which have been on the system less than five years, to normalize the water loss percentage. Staff applied this water loss percentage to the normalized level of system delivery

for the purpose of calculating chemical costs. Staff currently has a data request asking the Company to update its system delivery data through the end of the true-up period as of December 31, 2017. Once this data is available, Staff may propose a further adjustment to the water loss percentages for any of MAWC's systems as part of its true-up audit. Staff's calculation for chemical expense is $8,858,169.

*Staff Expert/Witness: Ashley Sarver*

**7. Lease Expense**

MAWC incurred expenses related to its leases on equipment, facilities, and land during the year in the course of providing service to its customers. Staff has reviewed lease expenses and annualized each of these amounts to reflect an overall decrease in the ongoing level due to changes in lease payments and the expiration of leases that were not renewed by MAWC. Staff's calculation for allowable lease expense is $336,469.

*Staff Expert/Witness: Ali Arabian*

**8. Transportation Lease Expense**

Transportation expense is the cost associated with MAWC's use of vehicles like trucks, vans, and cars, along with other power-operated equipment such as forklifts, tractors, etc. Staff annualized each of these amounts to reflect the increases and decreases in the current lease agreement for these items. Staff reviewed the effective date of the leases for these items through December 31, 2016, to determine which leases would be ongoing. Staff annualized the cost of the ongoing vehicle leases based on changes in lease terms through December 31, 2016. Additionally, MAWC incurs fuel expenses for these leased vehicles. Staff annualized the test year fuel costs for leased vehicles to reflect current fuel prices. Staff calculated the transportation lease expense to be $1,253,609.

*Staff Expert/Witness: Ali Arabian*

**9. Insurance Expense**

Insurance expense is the cost of protection obtained from third parties by utilities against the risk of financial loss associated with unanticipated events or occurrences. Utilities, like non-regulated entities, routinely incur insurance expense in order to minimize their liability associated with unanticipated losses. Staff adjusted MAWC's insurance

expense to reflect the current cost associated with all insurance premiums currently in effect at June 30, 2017. Staff's adjustment results in a total insurance expense of $3,996,910. Staff will review all insurance policies through the true-up period ending December 31, 2017, to reflect any additional changes to insurance premiums that may occur.

*Staff Expert/Witness: Caroline Newkirk*

**10. Accrued Franchise Taxes**

MAWC recorded $15,498 in accrued taxes during the test year in the Warrensburg service area. Staff proposes to disallow this amount from the cost of service because this is not an actual tax amount that MAWC paid during the test year. Accrued amounts are estimated amounts that are either removed or adjusted within the utility's books when the actual expenses are incurred.

*Staff Expert/Witness: Kimberly K. Bolin*

**11. Dues and Donations**

Staff reviewed the listings of various membership dues including Chamber of Commerce organizations and charitable donations paid by MAWC during the test year ending December 31, 2016. Staff disallowed dues related to Chamber of Commerce organizations that were not local because it was considered a duplicate. Staff disallowed any dues and donations that did not provide a direct benefit to the ratepayers and are not necessary to provide safe and reliable service to its customers. Any recovery in rates of these disallowed expenses would be an involuntary contribution on behalf of the rate paying customer.

In Re: Missouri Public Service, a Division of UtiliCorp United, Inc., Case Nos. ER-97-394, et al., Report and Order, 7 Mo.PSC.3d 178, 212 (1998), the Commission stated:

> The Commission has traditionally disallowed donations such as these. The Commission finds nothing in the record to indicate any discernible ratepayer benefit results from the payment of these donations. The Commission agrees with the Staff in that membership in the various organizations involved in this issue is not necessary for the provision of safe and adequate service to the MPS ratepayers.

Staff has also disallowed test year amounts pertaining to any lobbying expense or governmental affairs membership dues including Missouri Economic Development Association (MEDA) that pertained to lobbying and governmental affairs related activities.

Staff disallowed $380,932 which also includes lobbying expense and the Company removed $99,944 for a sum total disallowance of $480,876.

*Staff Expert/Witness: Ali Arabian*

**12. Promotional Giveaway Expenses**

Staff has removed from its cost of service calculation all costs incurred by MAWC during the test year for promotional giveaway items that were distributed at various events. Some of the items given away during the test year included polo shirts, tote bags, hardhats, dog bowls, umbrellas, and water bottles. All of these promotional giveaway items are deemed to be of no benefit to MAWC's ratepayers and also are not necessary for the provision of safe and adequate utility service to its customers. Staff's adjustment, the majority of which is included in the Advertising expense adjustment, is to disallow all $30,566 of Promotional Giveaway Expense.

*Staff Expert/Witness: Caroline Newkirk*

**13. Advertising Expense**

In determining the proper level of advertising expense in this proceeding, Staff relied on the principles outlined by the Commission in its 1986 Report and Order issued in ***Re: Kansas City Power and Light Company,*** Case Nos. EO-85-185, et al., 28 Mo. P.S.C. (N.S.) 228, 269-71 (1986). In its order, the Commission classified advertisements into five categories and provided separate rate treatment for each. The five categories of advertisements recognized by the Commission in the above order are as follows:

1. General: informational advertising that is useful in the provision of adequate service;
2. Safety: advertising which conveys the ways to safely use electricity and to avoid accidents;
3. Promotional: advertising used to encourage or promote the use of electricity;
4. Institutional: advertising used to improve the company's public image;
5. Political: advertising associated with political issues.

Categorizing a utility's advertisement expense into these categories ensures that a utility's revenue requirement: (1) always includes the reasonable and necessary cost of general and

safety advertisements; (2) never includes the cost of institutional or political advertisements; and (3) includes the cost of promotional advertisements only to the extent the utility can provide cost-justification for those advertisements.

Staff reviewed all advertisements that the Company provided and classified them using this five categories outlined by the Commission. Staff calculated the total advertising expense as $43,423. Staff recommends excluding the costs of institutional and promotional advertising, as well as costs for which the Company has provided no associated advertisements for review.

*Staff Expert/Witness: Caroline Newkirk*

**14. Contract Services**

For this case, Staff agrees with MAWC's proposed exclusion of tank painting costs from Outside Services. MAWC also annualized the contract service expense items for the new acquisitions for which only partial year data was available. Staff agrees with the inclusion of this annualization, but has found issue with the manner in which it was executed by the Company. The Company included the entire annualized amounts of $10,739 as an addition to the current test year even though $6,047 of this amount was already on the books. The total annualized amount should have been reduced by the amount that was already present in the GL to avoid "double dipping" of the months of overlap. Staff has re-calculated the amount that should be included as $4,692. Staff's adjustment results in a contract service expense of $4,330,909.

*Staff Expert/Witness: Caroline Newkirk*

**15. Waste Disposal**

Waste removal and disposal expenses result from the treatment of water or wastewater. These treatments leave behind byproducts that must be removed from the treatment facilities. The waste removal and disposal costs and methods vary by treatment facility. MAWC sets up an accrual amount on its books for an anticipated level of waste disposal expense. In the test year in this case, the actual level of expense was higher than anticipated, resulting in an under-accrual. Staff calculated the expense at $2,411,043, including the actual expenses that occurred in the test year and update period of January 1, 2016 through June 30, 2017. Staff's adjustment recognizes the actual costs that occurred in

the test year and eliminates the under-accrual. Staff will continue to evaluate this issue as part of its true-up audit.

*Staff Expert/Witness: Caroline Newkirk*

**16. Postage Expense**

Staff annualized postage expense by using Customer Numbers to determine the estimated number of annual bills and applying the current postage rate from the United States Postal Service to this amount. Staff used the allocation factors supplied by Staff witness Keith D. Foster to spread the postage expense to all districts. Staff's calculation for postage expense is $1,264,738.

*Staff Expert/Witness: Ali Arabian*

**17. Central Lab Expense**

The Central Lab, operated by American Water Works Service Company, provides a full suite of water analyses and related services to MAWC and American Water subsidiaries to meet required environmental regulations. In January 2012, a new Laboratory Information Management System (LIMS) was implemented at the Central Lab that subsequently resulted in efficiencies that reduced staffing, lessened testing turnaround time, and increased on-time delivery.

In previous rate cases, MAWC allocated all Central Lab costs based on a ratio of the number of MAWC customers to the total number of customers of all American Water affiliates using the services of Central Lab. The function of the Central Lab facility is exclusively for water sample testing to comply with required regulations. Therefore, Staff has consistently recommended using the number of test analyses as a basis of allocation because it represents a direct measurement of the work that is actually being performed at Central Lab for MAWC in relation to the work being performed by the lab for American Water subsidiaries in total. Furthermore, the amount of testing required for each subsidiary is dependent upon the type of facilities operated and the environment of the service area rather than the number of customers served.

In the previous case, MAWC accepted Staff's methodology of allocating lab costs and workload based solely on the analytical testing required by each American Water subsidiary. Central Lab directly charges each entity for its respective services, testing, and research.

The direct charge is based on a monthly query of LIMS for work performed and summarizes the services provided to each entity for the prior month. The services are then directly charged to each entity on the Service Company billing. All labor and related costs, as well as the majority of the other expenses, use a direct charge Work Breakdown Structure (WBS) element. Occasionally, other allocable lab expenses will be charged based on a customer count allocation factor when the direct charge formula is not applicable, such as for safety inspections, calibrations, housekeeping, or training. The overhead costs are assigned based on the labor costs as stated in the Service Company's Billing and Accounting Manual (BAM) filed with the Commission by MAWC on March 15, 2017.

Staff reviewed the expenses associated with the Central Laboratory and calculated the total expense at $114,326, reflecting Staff's allocation of indirect costs between American Water affiliates that is applicable to MAWC.

*Staff Expert/Witness: Keith D. Foster*

**18. Uncollectibles Expense**

Uncollectible expense, or bad debt expense, is the portion of retail revenues that MAWC is unable to collect from retail customers because of non-payment of customer bills. After a certain amount of time has passed, delinquent customer accounts are written-off and turned over to a third-party collection agency for recovery. If MAWC subsequently is able to successfully collect some portion of previously written off delinquent amounts owed, then those collected amounts reduce current write-offs. Offsetting successful collection agency recoveries against total write-offs creates the "net write-off" amount used to determine the annualized level of bad debt expense.

Staff examined the actual level of net write-offs (write-offs less collection agency recoveries) for the January 1, 2013 through June 30, 2017 period. Based upon that examination, Staff normalized the level of uncollectible expense, for each of MAWC's districts by using the amount of new write-offs for the twelve months ending June 30, 2017. Staff calculated the total amount at $2,868,911.

*Staff Expert/Witness: Ashley Sarver*

**19. Property Tax Expense**

For property tax assessment purposes, a utility is required to file a valuation of its utility property as of January 1 of each year with its taxing authority. Later in the year, the utility receives the "assessed values" of the property as well as property tax rates from the taxing authority. Finally, the utility receives a property tax bill late in the calendar year with a due date of December 31 of that year.

Due to the timing of this rate case, the test year property tax expense represents the most recent known and measureable level of property tax expense level for the Company. Therefore, Staff recommends that no adjustment be made to test year property tax expense at this time. Staff has calculated the current property tax at 14,208,628. Prior to year-end 2017, the Company will receive its 2017 property tax bills from its various taxing authorities. As part of its true-up audit, Staff will review these 2017 property tax assessments and foresees utilizing these assessed values to annualize property tax expense. Staff will also review any known material changes in how the taxing authorities assess MAWC's property that will become effective January 1, 2018 to consider whether the financial impact of those changes should be reflected in the true-up audit results as well.

*Staff Expert/Witness: Amanda C. McMellen*

## G. Current and Deferred Income Tax

### 1. Current Income Tax

Staff calculated the current income tax generally consistent with the methodology used in the last three MAWC rate cases, Case Nos. WR-2010-0131, WR-2011-0337, and WR-2015-0301. The calculation starts with Staff's adjusted net operating income before taxes amount and adding to or subtracting from it various tax timing differences to obtain a net taxable income amount for ratemaking purposes. A tax timing difference occurs when the timing used in reflecting a cost (or revenue) for financial reporting purposes (book purposes) is different than the timing required by the IRS in determining taxable income (tax purposes).

Tax timing differences can be either "normalized" or "flowed through" for purposes of setting rates. The "normalization" tax method defers the tax deduction for ratemaking purposes until the item is recognized on the utility's income statement for financial reporting

purposes. The flow-through tax method essentially provides for the same tax deduction taken as a deduction for ratemaking purposes at the same time as it is taken for tax purposes.

Staff's current income tax calculation reflects timing differences consistent with the timing required by the IRS. The tax timing differences used in calculating taxable income for computing current income tax are as follows:

- **Add Back to Operating Income Before Taxes:**
- Book Depreciation Expense
- Advances for Construction
- Contributions in Aid of Construction
- Miscellaneous Non-deductible Expenses
- 50% Meals & Entertainment

- **Subtractions from Operating Income Before Taxes:**
- Interest Expense - Weighted Cost of Debt
- Straight-Line Tax Depreciation
- Excess-Tax Depreciation

The resulting net taxable income for ratemaking is then multiplied by the appropriate federal and state tax rates to obtain the current liability for income taxes. Staff normally uses a federal tax rate of 35.0 percent and a state income tax rate of 6.25 percent for calculating current income taxes for utilities with net income over $18.3 million. This composite tax rate (state and federal combined together) is 38.39 percent**.**

Staff's calculation of current income tax provides flow-through treatment to the following tax timing differences: book depreciation, advances for construction, miscellaneous non-deductible expense, 50% meals and entertainment expenses, and straight-line tax depreciation. Staff's calculation also provides normalization treatment to the excess-tax depreciation timing difference. The difference between the calculated current income tax provision and the per book income tax provision is the current income tax provision adjustment.

*Staff Expert/Witness: Keith D. Foster*

**2. Straight Line Tax Depreciation**

Annualized book depreciation is a result of multiplying the plant investment at June 30, 2017, the end of the test year update period for this proceeding, by the book

depreciation rates recommended by Staff witness Keenan B. Patterson, PE of the Operational Analysis Department, Engineering Analysis Unit.

The IRS allows a regulated utility, like any other corporation, to use an accelerated depreciation method in calculating its current income tax liability. However, with regard to a regulated utility, Congress intended for the additional cash flow (lower current income tax), resulting from an accelerated depreciation method, to be retained by the utility. As a result, under IRS rules for a regulated utility, the additional deduction resulting from the use of an accelerated depreciation method cannot be currently reflected in rates. Ratepayers receive the tax deduction benefit associated with depreciation expense over the same period used for book accounting purposes. The straight-line tax depreciation amount is the result of applying the current authorized book depreciation rates to the adjusted tax basis MAWC plant balances.

In this MAWC rate case, Staff's book depreciation and straight-line tax depreciation are different. Staff applied a straight-line tax ratio to MAWC's book depreciation to calculate MAWC's straight-line tax depreciation.

*Staff Expert/Witness: Keith D. Foster*

### 3. Deferred Income Tax Expense

MAWC's deferred tax reserve is, in effect, a prepayment of income taxes by MAWC's customers before payment by MAWC. As an example, because MAWC may choose to deduct depreciation expense on an accelerated basis for income tax purposes, depreciation expense used for income taxes paid by MAWC is considerably higher than depreciation expense used for ratemaking purposes. This results in a "book-tax timing difference," and creates a deferral of income taxes to the future. The net credit balance in the deferred tax reserve is a source of cost-free funds to MAWC. Therefore, to avoid having customers pay a return on funds that are provided cost-free to the Company, Staff's calculation reduces MAWC's rate base by the deferred tax reserve balance. Generally, deferred income taxes associated with all book-tax timing differences created through the ratemaking process should be reflected in rate base. Staff took this approach in this case, to calculate the deferred income tax rate base offset amount. Staff included in rate base the deferred income taxes for all of MAWC operating districts.

When a current year timing difference is deferred and recognized for ratemaking purposes consistent with the timing used in calculating pre-tax operating income in the financial statements, then that timing difference is given "normalization" treatment for ratemaking purposes. Deferred income tax expense for a regulated utility reflects the tax impact of "normalizing" tax timing differences for ratemaking purposes. IRS rules for regulated utilities require normalization treatment for the timing difference related to accelerated tax depreciation.

For most utilities, it is necessary to break out a utility's tax depreciation into two separate components: straight-line tax depreciation and excess tax depreciation. Straight-line tax depreciation is different from straight-line book depreciation due to the different tax basis of property allowed under the tax code. Excess tax depreciation differs from straight-line book depreciation due to the higher depreciation rates allowed in the early years of an asset's life under the current tax code. Most tax basis differences were eliminated for assets placed into service after 1986 due to the Tax Reform Act enacted that year.

Staff's typical deferred income tax adjustment consists of three components:

1. IRS "Schedule M" timing differences - contributions in aid of construction and advances for construction: These amounts have been flowed through;

2. The tax timing difference between straight-line tax depreciation expense and excess tax depreciation expense: This amount has been normalized; and

3. Excess deferred income taxes resulting from the 1986 Tax Reform Act, which created excess deferred tax amounts associated with depreciation timing differences: As such, an amortization has been created to amortize excess deferred taxes created from the change in tax rates in 1986 back to customers over time.

In this case, a combination of the above three components make up the amounts recorded as deferred income tax expense by MAWC.

As previously discussed in the ADIT section of the Report, MAWC is currently experiencing NOLs for income tax purposes. The effect of NOLs is to reduce the amount of the ADIT net rate base reduction that would otherwise be reflected in a cost of service calculation. It is Staff's position that the entire amount of deferred income tax expense included in customer rates should include the ADIT amount in rate base, to recognize that

deferred income tax collections are a source of cost-free capital to the utility. As of the date of this filing, Staff is continuing to review the appropriate amount of deferred tax expense to include in its case, to ensure the amount of deferred income taxes to be provided to MAWC by its customers does not exceed the amount that can be reflected as a reduction to rate base due to the existence of the NOL deferred tax asset.

*Staff Expert/Witness: Keith D. Foster*

## IX. Appendices

Appendix 1: Staff Credentials

Appendix 2: Support for Staff Cost of Capital Recommendation – Jeffrey Smith

Appendix 3: Customer Usage per Day - Jarrod J. Robertson
Recommended Depreciation Rates - Keenan B. Patterson, PE

**BEFORE THE PUBLIC SERVICE COMMISSION**

**OF THE STATE OF MISSOURI**

| | | |
|---|---|---|
| In the Matter of Missouri-American Water Company's Request for Authority to Implement General Rate Increase for Water and Sewer Service Provided in Missouri Service Areas | ) ) ) ) ) | Case No. WR-2017-0285 |

**AFFIDAVIT OF ALI ARABIAN**

| | | |
|---|---|---|
| STATE OF MISSOURI | ) | |
| | ) | ss. |
| COUNTY OF COLE | ) | |

**COMES NOW ALI ARABIAN** and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing Cost of Service Report; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

**ALI ARABIAN**

**JURAT**

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 29th day of November, 2017.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: December 12, 2020
Commission Number: 12412070

Notary Public

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**AFFIDAVIT OF KIMBERLY K. BOLIN**

STATE OF MISSOURI )
) ss.
COUNTY OF COLE )

**COMES NOW KIMBERLY K. BOLIN** and on her oath declares that she is of sound mind and lawful age; that she contributed to the foregoing Cost of Service Report; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

Kimberly K. Bolin
**KIMBERLY K. BOLIN**

**JURAT**

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State of Missouri
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D Suzie Mankin
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**AFFIDAVIT OF JAMES A. BUSCH**

| | | |
|---|---|---|
| STATE OF MISSOURI | ) | |
| | ) | ss. |
| COUNTY OF COLE | ) | |

**COMES NOW JAMES A. BUSCH** and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing Cost of Service Report; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

**JAMES A. BUSCH**

**JURAT**

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**AFFIDAVIT OF KEITH D. FOSTER**

| | | |
|---|---|---|
| STATE OF MISSOURI | ) | |
| | ) | ss. |
| COUNTY OF COLE | ) | |

**COMES NOW KEITH D. FOSTER** and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing Cost of Service Report; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

**KEITH D. FOSTER**

**JURAT**

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 28th day of November, 2017.

D. SUZIE MANKIN
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**AFFIDAVIT OF JENNIFER K. GRISHAM**

STATE OF MISSOURI )
) ss.
COUNTY OF COLE )

**COMES NOW JENNIFER K. GRISHAM** and on her oath declares that she is of sound mind and lawful age; that she contributed to the foregoing Cost of Service Report; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

**JENNIFER K. GRISHAM**

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**AFFIDAVIT OF AMANDA C. McMELLEN**

STATE OF MISSOURI )
) ss.
COUNTY OF COLE )

**COMES NOW AMANDA C. McMELLEN** and on her oath declares that she is of sound mind and lawful age; that she contributed to the foregoing Cost of Service Report; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

Amanda C McMellen
**AMANDA C. McMELLEN**

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**AFFIDAVIT OF CAROLINE NEWKIRK**

STATE OF MISSOURI )
) ss.
COUNTY OF COLE )

**COMES NOW CAROLINE NEWKIRK** and on her oath declares that she is of sound mind and lawful age; that she contributed to the foregoing Cost of Service Report; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

Caroline Newkirk

**CAROLINE NEWKIRK**

**JURAT**

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**AFFIDAVIT OF MARK L. OLIGSCHLAEGER**

STATE OF MISSOURI )
) ss.
COUNTY OF COLE )

**COMES NOW MARK L. OLIGSCHLAEGER** and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing Cost of Service Report; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

Mark L. Oligschlaeger

**MARK L. OLIGSCHLAEGER**

**JURAT**

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D. Suzie Mankin

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**AFFIDAVIT OF KEENAN B. PATTERSON, PE**

STATE OF MISSOURI )
) ss.
COUNTY OF COLE )

**COMES NOW KEENAN B. PATTERSON, PE** and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing Cost of Service Report; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

**KEENAN B. PATTERSON, PE**

**JURAT**

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**AFFIDAVIT OF JARROD J. ROBERTSON**

STATE OF MISSOURI )
) ss.
COUNTY OF COLE )

**COMES NOW JARROD J. ROBERTSON** and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing Cost of Service Report; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

**JARROD J. ROBERTSON**

**JURAT**

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**AFFIDAVIT OF ASHLEY SARVER**

STATE OF MISSOURI )
) ss.
COUNTY OF COLE )

**COMES NOW ASHLEY SARVER** and on her oath declares that she is of sound mind and lawful age; that she contributed to the foregoing Cost of Service Report; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

Ashley Sarver
**ASHLEY SARVER**

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**AFFIDAVIT OF JEFFREY SMITH**

STATE OF MISSOURI )
) ss.
COUNTY OF COLE )

**COMES NOW JEFFREY SMITH** and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing Cost of Service Report; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

**JEFFREY SMITH**

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