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Issues:

15  
Cost Allocation/Rate Design

Witness:  
Exhibit Type:  
Sponsoring Party:  
Case No.:

Constance E. Heppenstall  
Direct  
Missouri-American Water Company  
WR-2017-0285  
SR-2017-0286  
June 30, 2017

Date:

**MISSOURI PUBLIC SERVICE COMMISSION**

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

DIRECT TESTIMONY

OF

CONSTANCE E. HEPPENSTALL

ON BEHALF OF

MISSOURI-AMERICAN WATER COMPANY

MAWC Exhibit No. 15  
Date 3-7-18 Reporter A.F.  
File No WR-2017-0285

Exhibit 15  
WR-2017-0285  
Direct Testimony of Constance E.  
Heppenstall

DIRECT TESTIMONY  
CONSTANCE E. HEPPENSTALL  
MISSOURI-AMERICAN WATER COMPANY  
CASE NO. WR-2017-0285  
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File No. \_\_\_\_\_  
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Reporter \_\_\_\_\_  
Exhibit No. \_\_\_\_\_

**DIRECT TESTIMONY  
CONSTANCE E. HEPPENSTALL  
MISSOURI-AMERICAN WATER COMPANY  
CASE NO. WR-2017-0285  
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BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MISSOURI

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

AFFIDAVIT OF CONSTANCE E. HEPPENSTALL

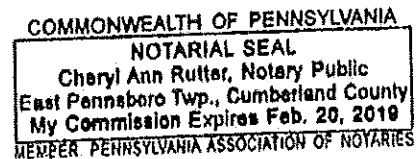
Constance E. Heppenstall, being first duly sworn, deposes and says that she is the witness who sponsors the accompanying testimony entitled "Direct Testimony of Constance E. Heppenstall"; that said testimony and schedules were prepared by her and/or under her direction and supervision; that if inquiries were made as to the facts in said testimony and schedules, she would respond as therein set forth; and that the aforesaid testimony and schedules are true and correct to the best of her knowledge.

  
Constance E Heppenstall

Commonwealth of Pennsylvania  
County of Cumberland  
SUBSCRIBED and sworn to  
Before me this 26th day of June 2017.

  
Notary Public

My commission expires: February 20, 2019



1  
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5

**DIRECT TESTIMONY  
CONSTANCE E. HEPPENSTALL**

6

**I. WITNESS INTRODUCTION AND QUALIFICATIONS AND EXPERIENCE**

7 **Q. Please state your name and address.**

8 A. My name is Constance E. Heppenstall. My business address is 1010 Adams  
9 Avenue, Audubon, Pennsylvania.

10 **Q. By whom are you employed?**

11 A. I am employed by Gannett Fleming Valuation and Rate Consultants, LLC.

12

13 **Q. Please describe your position with Gannett Fleming Valuation and Rate  
14 Consultants, LLC and briefly state your general duties and responsibilities.**

15 A. My title is Project Manager, Rate Studies. My duties and responsibilities include  
16 the preparation of accounting and financial data for revenue requirement and  
17 cash working capital claims, the allocation of cost of service to customer  
18 classifications, and the design of customer rates in support of public utility rate  
19 filings.

20

21 **Q. Have you presented testimony in rate proceedings before a regulatory  
22 agency?**

23 A. Yes. I have testified before the Pennsylvania Public Utility Commission, the  
24 Arizona Corporation Commission, and the Kentucky Public Service  
25 Commission. A list of cases in which I have testified is attached to my

1 testimony.

2

3 **Q. What is your educational background?**

4 A. I have a Bachelor of Arts Degree in Economics from the University of Virginia,  
5 Charlottesville, Virginia and a Master's of Science in Industrial Administration  
6 from Carnegie-Mellon University' Tepper School of Business, Pittsburgh,  
7 Pennsylvania.

8

9 **Q. Would you please describe your professional affiliations?**

10 A. I am a member of the American Water Works Association, the Pennsylvania  
11 Municipal Authorities Association and the National Association of Water  
12 Companies.

13

14 **Q. Briefly describe your work experience.**

15 A. I joined the Valuation and Rates Division of Gannett Fleming (formerly Gannett  
16 Fleming, Inc.) in August 2006, as a Rate Analyst. Prior to my employment at  
17 Gannett Fleming, I was a Vice President of PriMuni, LLP where I developed  
18 financial analyses to test proprietary software in order to ensure its pricing  
19 accuracy in accordance with securities industry's conventions. From 1987 to  
20 2001, I was employed by Commonwealth Securities and Investments, Inc. as a  
21 public finance professional where I created and implemented financial models for  
22 public finance clients in order to create debt structures to meet clients' needs.  
23 From 1986 to 1987, I was a public finance associate with Mellon Capital Markets.

1

2 **Q. What is the purpose of your testimony in this proceeding?**

3 A. The purpose of my testimony is to present and explain Missouri-American Water  
4 Company's (or MAWC or Company) State-wide cost of service allocation study  
5 for water operations (sometimes called class cost of service study) and proposed  
6 rate design set forth in Schedule No. CEH-1. Schedule No. CEH-2 sets forth the  
7 cost of service and the revenues under present and proposed rates for  
8 wastewater operations.

9

10 **Q. Were Schedule Nos. CEH-1 and CEH-2 prepared by you or under your**  
11 **direction and supervision?**

12 A. Yes, they were.

13

14

## **II. COST OF SERVICE ALLOCATION - WATER**

15 **Q. Briefly describe the purpose of your water cost allocation study.**

16 A. The purpose of the study was to allocate the State-wide cost of service, which is  
17 the total revenue requirement for MAWC water operations to the customer  
18 classifications. The State-wide cost of service (All Districts) is the sum of the pro  
19 forma cost of operations for the following districts: District 1, District 2, District 3  
20 and the several small water districts acquired by MAWC since its last rate case,  
21 including: Wardsville and Pevely Farms. In this State-wide study, the aggregated  
22 cost of water service was allocated to the following customer classifications:  
23 Residential class, Non-Residential Class, consisting of small commercial,  
24 industrial, and other public authorities customers, Rate J, consisting of large

1 commercial, industrial and public customers and Rate B, consisting of sales for  
2 resale customers and Rate F, private fire protection customers. The cost of  
3 service associated with public fire protection was identified and reallocated back  
4 to the Residential, Non-Residential and Rate J customer classifications. The  
5 study was performed in accordance with generally accepted principles and  
6 procedures and results in indications of the relative cost responsibilities of each  
7 class of customers. The allocated cost of service is one of several criteria  
8 appropriate for consideration in designing customer rates to produce the required  
9 revenues. The results of the allocation of the State-wide cost of service for the  
10 test year ended May 31, 2019, and the revenues from the proposed rates, which  
11 produce the pro forma revenue requirements, are presented in the study.

12  
13 **Q. Please describe the method of cost allocation that was used in your study.**

14 A. The base-extra capacity method, as described in 2017 and prior Water Rates  
15 Manuals published by the American Water Works Association (AWWA), was  
16 used to allocate the pro forma costs. Base-extra capacity is a recognized  
17 method for allocating the cost of providing water service to customer  
18 classifications in proportion to the classifications' use of the commodity, facilities,  
19 and services. It is generally accepted as a sound method for allocating the cost  
20 of water service and was used by the Company in previous cases.

21  
22 **Q. Please describe the procedure followed in the cost allocation study.**

23 A. Each identified classification of cost in the cost of service study was allocated to  
24 the customer classifications through the use of appropriate factors. These



1 allocations are presented in Schedule B for each study. The items of cost, which  
2 include operation and maintenance expenses, depreciation expense, taxes and  
3 income available for return, are identified in column 1 of Schedule B. The cost of  
4 each item, shown in column 3, is allocated to the several customer classifications  
5 based on allocation factors referenced in column 2. The development of the  
6 allocation factors is presented in Schedule C. I will use some of the larger cost  
7 items to illustrate the principles and considerations used in the cost allocation  
8 methodology.

9 Purchased water, purchased electric power, treatment chemicals and  
10 waste disposal are examples of costs that tend to vary with the amount of water  
11 consumed and are thus considered base costs. They are allocated to the  
12 several customer classifications in direct proportion to the average daily  
13 consumption of those classifications through the use of Factor 1. The  
14 development of Factor 1 is shown in Schedule C.

15 Other source of supply, water treatment and transmission costs are  
16 associated with meeting usage requirements in excess of the average, generally  
17 to meet maximum day requirements. Costs of this nature were allocated to  
18 customer classifications partially as base costs, proportional to average daily  
19 consumption, partially as maximum day extra capacity costs, in proportion to  
20 maximum day extra capacity, and, in the case of pumping stations and  
21 transmission mains, partially as fire protection costs, through the use of Factors 2  
22 and 3. The development of the allocation factors, referenced as Factors 2 and 3,  
23 is shown in Schedule C.

24 Costs associated with storage facilities and the capital costs of distribution

1 mains were allocated partly on the basis of average consumption and partly on  
2 the basis of maximum hour extra demand, including the demand for fire protec-  
3 tion service, because these facilities are designed to meet maximum hour and  
4 fire demand requirements. The development of the factors, referenced as  
5 Factors 4 and 5, used for these allocations is shown in Schedule C.

6 Fire demand costs were allocated to public and private fire protection  
7 service in proportion to the relative potential demands on the system by public  
8 fire hydrants and private service lines as presented in Schedule E.

9 For operation and maintenance of mains, the relative weightings of Factor  
10 3 (maximum day and fire) and Factor 4 (maximum hour) were based on the  
11 footage of transmission and distribution mains. Generally, for cost allocation  
12 purposes, mains 10-inch and larger were classified as serving a transmission  
13 function and mains smaller than 10-inch were classified as serving a distribution  
14 function. The development of this weighted factor is referenced as Factor 6.

15 Costs associated with meters were allocated to customer classifications in  
16 proportion to the relative unit costs of the sizes and quantities of meters serving  
17 each classification. The development of the factor for meters is referenced as  
18 Factor 8. Factor 9, Allocation of Services, was developed in a similar manner as  
19 Factor 8, except that the relative unit cost per foot by service size was used in  
20 order to weight the number of services by classification. Costs associated with  
21 public fire hydrants were assigned directly to the public fire protection class  
22 (Factor 7).

23 Costs for customer accounting, billing and collecting were allocated on the  
24 basis of the number of customers for each classification, and costs for meter

1 reading were allocated on the basis of metered customers. The development of  
2 these factors is referenced as Factor 12 and Factor 13.

3 Administrative and general costs were allocated on the basis of allocated  
4 direct costs, excluding those costs such as purchased water, power, chemicals  
5 and waste disposal, which require little administrative and general expense. The  
6 development of this factor is referenced as Factor 14.

7 Cash working capital is allocated based on total operation and  
8 maintenance expense. The development of the factor is referenced as Factor  
9 15.

10 Annual depreciation accruals were allocated on the basis of the function of  
11 the facilities represented by the depreciation expense for each depreciable plant  
12 account. The original cost less depreciation of utility plant in service was  
13 similarly allocated for the purpose of developing factors, referenced as Factor 18,  
14 for allocating items such as income taxes and return. The development of Factor  
15 18 is presented on the last three pages of Schedule C.

16 Factors 15 and 18, as well as Factors 10, 11, 16, 17 and 19, are  
17 composite allocation factors. These factors are based on the result of allocating  
18 other costs and are computed internally in the cost allocation program. Refer to  
19 Schedule C for a description of the bases for each composite allocation factor.

20  
21 **Q. What was the source of the total cost of service data set forth in column 3**  
22 **of Schedule B?**

23 **A.** The pro forma costs of service were furnished by the Company, and are set forth  
24 in Company accounting exhibits and workpapers.

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**Q. Refer to Schedule C, and explain the source of the system maximum day and maximum hour ratios used in the development of factors referenced as Factors 2, 3 and 4.**

A. The ratios were based on a review of State-wide system deliveries for the Company. Schedule D shows the experienced maximum day ratios over the last several years. The maximum hour ratios were estimated based on actual data or the relationship of system maximum hour ratios compared to system maximum day ratios for similar systems.

**Q. What factors were considered in estimating the maximum day extra capacity and maximum hour extra capacity demands used for the customer classifications in the development of Factors 2, 3 and 4?**

A. The estimated demands were based on judgment which considered field studies of actual customer class demands conducted for other American Water Companies, field observations of the service areas of the Company, and generally-accepted customer class maximum day and maximum hour demand ratios.

**Q. Please explain the allocation of small mains.**

A. Factor 4, used to allocate distribution mains, was modified to exclude consumption for all Rate B and certain Rate J customers connected primarily to large mains, commonly referred to as transmission mains, in Districts 1, 2 and 3. This was done to recognize that certain industrial and sales for resale customers

1 are connected directly to the transmission system and do not benefit from the  
2 smaller distribution mains.

3

4 **Q. How was this adjustment accomplished?**

5 A. In District 2, the five largest industrial customers are connected to mains 10-inch  
6 and larger. The test year consumption for these five customers was excluded  
7 from the Rate J class for the basis of developing Factor 4. In addition, all sales  
8 for resale customers are served from the transmission system and therefore  
9 were excluded from Factor 4.

10 In District 3, the five largest Rate J accounts and all sales for resale  
11 accounts are served from mains 10-inch and larger. The test year consumption  
12 for these customers was excluded in the development of Factor 4. In addition, all  
13 sales for resale customers are served from the transmission system and  
14 therefore were excluded from Factor 4.

15 In District 1, all sales for resale customers are served from the  
16 transmission system and therefore, were excluded from Factor 4. For the large  
17 users in the Rate J classification, ten percent of the Rate J consumption was  
18 used in the development of Factor 4, to reflect that a small part of the distribution  
19 mains are used by these large customers.

20

21 **Q. Have you summarized the results of your cost allocation study?**

22 A. Yes. The results are summarized in columns 1, 2 and 3 of Schedule A. Column  
23 2 sets forth the total allocated pro forma, State-wide cost of service as of May 31,  
24 2019, for each customer classification identified in column 1. Column 3 presents

1 each customer classification's cost responsibility as a percent of the total cost.

2

3 **Q. Have you compared these cost responsibilities with the proportionate**  
4 **revenue under existing rates for each customer classification?**

5 A. Yes. A comparison of the allocated cost responsibilities and the percentage  
6 revenue under existing rates can be made by comparing columns 3 and 5 of  
7 Schedule A. A similar comparison of the percentage cost responsibilities  
8 (relative cost of service) and the percentage of pro forma revenues (relative  
9 revenues) under proposed rates can be made by comparing columns 3 and 7 of  
10 Schedule A.

11

### 12 **III. CUSTOMER RATE DESIGN - WATER**

13 **Q. What are the appropriate factors to be considered in the design of the rate**  
14 **structure?**

15 A. In preparing a rate structure, one should consider the allocated costs of service,  
16 the impact of changes from the present rate structure, the understandability and  
17 ease of application of the rate structure, community and social influences, and  
18 the value of service. General guidelines should be developed with management  
19 to determine the extent to which each of these criteria is to be incorporated in the  
20 rate structure to be designed, inasmuch as the pricing of a commodity or service  
21 is a function of management.

22

23 **Q. Did management discuss rate design guidelines with you?**

24 A. Yes, they did. The guidelines were as follows: (1) Develop rate schedules that

1 move toward a consolidated tariff pricing rate schedule applicable to all water  
2 customers State-wide as closely as possible; (2) maintain uniform customer  
3 charges to recover the pro forma customer costs by meter size; (3) design  
4 uniform volumetric rates for the residential and non-residential classes and a  
5 volumetric rate for both Rate B and Rate J for two rate zones so that proposed  
6 revenues by customer classification move toward or approximate the indicated  
7 cost of service; (4) design private fire line and private hydrant rates for a  
8 consolidated rate zone to recover the indicated cost of service; and (5) develop  
9 tariff rates for combining all wastewater service areas into two sewer tariff  
10 groups, the Arnold WW tariff group and the non-Arnold tariff group The non-  
11 Arnold tariff group is then split into two rate zones as described further in my  
12 testimony.

13  
14 **Q. Do you agree with these guidelines?**

15 **A.** Yes, I do.

16  
17 **Q. Have you prepared proposed rate schedules for each classification for**  
18 **three rate districts?**

19 **A.** Yes. Comparisons of present and proposed rate schedules for Districts #1, 2  
20 and 3 are set forth in Company Schedule CAS-12. District #1 East Central, per  
21 the Commissions prior order includes St. Louis Metro, Mexico, Jefferson City,  
22 Lake Carmel, Hickory Hills, Anna Meadows, Redfield and Jaxson Estates.  
23 District #2 Northwest includes St. Joseph, Brunswick and Platte County. District  
24 #3 Southwest Joplin, Warrensburg, Tri-State, Emerald Pointe, Branson Canyon,

1 Spring Valley, Ozark Mountain, Lakewood, Rankin Acres, Whitebranch,  
2 Maplewood, Stonebridge, Saddlebrooke and Riverside. Additional areas include  
3 the recently acquired Village of Wardsville and pending acquisition of Pevely  
4 Farms.

5  
6 **Q. Please explain the proposed customer charges.**

7 A. Currently the Company customer charge includes both a monthly charge of  
8 \$15.33 (5/8-inch monthly) and a quarterly charge of \$22.35 or \$7.45 per month,  
9 both increasing by meter size. The Company is planning on moving all customer  
10 currently charged on a quarterly basis (all in District 1) to a monthly basis which,  
11 under current rates, would more than double their effective monthly customer  
12 charge (from an effective rate of \$7.45 per month to \$15.33 per month). In light  
13 of this, the Company is proposing to lower its 5/8-inch monthly customer charge  
14 to \$10.00 per month from \$15.33 per month, and set its quarterly charge equal to  
15 \$30.00, or three times the proposed monthly customer charge. An analysis of  
16 the State-wide customer costs determined the appropriate monthly costs for a  
17 5/8-inch meter is \$18.68 per month (See Schedule F). However, the Company is  
18 willing to forgo this increase in customer charge during the transition from  
19 quarterly to monthly bills. The increases to the larger sizes (3/4-inch through 12-  
20 inch meters) were based on the existing meter ratios by size to the 5/8-inch  
21 charge.

22  
23 **Q. Please explain the volumetric charges.**

24 A. A one-block uniform volumetric rate is proposed for Districts 1, 2, and 3 for the



1 residential and non-residential customer classes classifications and two different  
2 rates zones (one for District #1 and another that combines Districts 2 and 3) for  
3 the Rate J and Rate B classes. The rates were set so that proposed revenues  
4 would move toward the indicated cost of service without decreasing revenues for  
5 any class.

6  
7 **Q. Please explain private fire charges.**

8 A. Proposed rates combine private fire rates into one rate for all districts.

9  
10 **Q. Please explain the public fire hydrant charges.**

11 A. The cost of service for public fire protection was established and allocated back  
12 to Residential, Non-Residential and Rate J customer classes based on meter  
13 equivalents. Under proposed rates, public fire service is included in the customer  
14 charge and recovered based on meter size.

15  
16 **Q. Has the Company prepared proof of revenue schedules under present and  
17 proposed rates?**

18 A. Yes. The proof of revenue shows that the application of the present and  
19 proposed rates to the billing determinants or bill analysis produce the pro forma  
20 present and proposed revenue and proves that the proposed rates filed in the  
21 proposed tariffs recover the requested revenue requirements.

22 Schedule CAS-11 and 12, sponsored by Mr. LaGrand, sets forth the proof  
23 of revenues from the application of present and proposed rates to the customer  
24 consumption analysis. The revenues from these exhibits are brought forward to

1 Schedule A, columns 4 and 6.

2

3

#### IV. CONSOLIDATED TARIFF PRICING

4 **Q.**

**The proposed rate design for the three rate zones is a step toward State-wide consolidated tariff pricing. Please describe the concept of consolidated tariff pricing.**

7 **A.**

Consolidated tariff pricing (CTP) is the use of the same rates for the same service rendered by a water company regardless of the customer's location. The Company was directed in the Report and Order in its last rate case, File No. WR-2015-0301, to "fully examine single-tariff pricing in the next rate case".

11

12 **Q.**

**What are the factors that support the use of consolidated rates?**

13 **A.**

Consolidated rates are based on the long-term rate stability which results from a consolidated tariff, the similar operating characteristics of the tariff groups, the equivalent services offered, the cost of service on a district specific basis, and the principle of gradualism.

17

18 **Q.**

**Please explain how consolidated rates will provide long-term rate stability for the several areas.**

20 **A.**

Utility customer rates are dependent on the total expenses and rate base of the utility and the amount of the commodity which the utility sells. Changes in rate base, particularly as the result of the Safe Drinking Water Act, have a significant potential for adversely impacting the rates for certain areas within a utility.

24

The ability to absorb the cost of such projects over a larger customer base

1 is a compelling argument in support of rate consolidation. Capital programs will  
2 never be uniform in the several operating areas, even over periods of 5 to 10  
3 years. The cost of specific programs should be shared by all customers rather  
4 than burdening those of the affected areas. Rate increases will be more stable  
5 and major increases in specific tariff groups will be avoided.

6  
7 **Q. In what manner do the operating characteristics of the several areas**  
8 **support consolidated tariff pricing?**

9 A. There are many similarities in the manner in which the several areas are  
10 operated. All of the systems pump their treated water through transmission lines  
11 to distribution areas that include mains, booster pump stations and storage  
12 facilities. All of the areas provide water to individual customers through a service  
13 line and meter. All of the areas rely on a centralized work force for billing,  
14 accounting, engineering, administration, and regulatory matters. All of the areas  
15 rely on a common source of funds for financing working capital and plant  
16 construction. Inasmuch as the costs of operation are related to functions in  
17 which the operating characteristics are the same, the use of equal rates is  
18 supported.

19  
20 **Q. Please explain why the equivalence of services offered support**  
21 **consolidated tariff pricing.**

22 A. The use of the same rates in a utility with noncontiguous service areas is  
23 supported by the equivalent service rendered in each area. Although there  
24 would be considerable debate with respect to the equivalency of the service

1 rendered to different customer classifications, there is no question that the  
2 service rendered to a residence in one area is the same as the service rendered  
3 to a residence in another area. Residential customers are relatively consistent in  
4 their uses of water: cooking, bathing, cleaning and other sanitary purposes, and  
5 lawn sprinkling. If customers use water for the same purposes, the service  
6 offering is the same and should be priced accordingly. Thus, from this  
7 perspective, there is no basis for charging different prices to customers in  
8 different areas.

9  
10 **Q. Do variances between allocated costs of the districts warrant the use of**  
11 **separate rate schedules?**

12 A. No, they do not. Charging one group of customers higher rates because they  
13 may be served by a newer plant whose original cost exceeds that of other plants  
14 (as a result of inflation) is not logical. The concepts previously discussed  
15 outweigh this consideration and justify the goal of moving toward a consolidated  
16 tariff. The electric industry reflects such concepts when it serves customers in  
17 geographically dispersed areas. A kilowatt-hour delivered in one area has the  
18 same price as a kilowatt-hour delivered in another area despite the fact that cost  
19 of service studies could be performed to identify differences in the cost of  
20 providing service to customer classes in different regions.

21  
22 **Q. Are there other cost of service considerations that support consolidated**  
23 **tariff pricing?**

24 A. Yes. The Company manages the State-wide operations from a common

1 location. Common costs which must be assigned or allocated to each operating  
2 area to establish district specific revenue requirements include management  
3 fees, corporate headquarter costs, office costs, customer service costs,  
4 depreciation expense developed on the basis of Company-wide depreciation  
5 rates, capital structure, and income tax expense based on total Company  
6 financing and tax provisions. The allocations of common costs, while  
7 reasonable, are subject to judgment and may not result in the development of  
8 district specific revenue requirements which reflect precisely the cost of serving  
9 each area.

10  
11 **Q. Briefly summarize your analysis of consolidated tariff pricing for MAWC.**

12 A. Consolidated Tariff Pricing is appropriate for MAWC. Such pricing is supported  
13 by considerations of the benefits of sharing the impact of capital programs on a  
14 Company-wide basis, the significant majority of common costs, and the  
15 equivalent service rendered. The best interests of the customers are served  
16 through gradualism by continuing to implement consolidated rates during this  
17 case and in subsequent rate cases.

18  
19 **V. INCLINING BLOCK RATES**

20 **Q. In the prior order, the Commission asked the Company to examine**  
21 **inclining block rates. What is an inclining block rate structure?**

22 A. Inclining block rate structure includes increasing volumetric rates by block so that  
23 the price per unit of water increases with consumption.

1 **Q. Do you recommend that the Company adopt inclining block rates?**

2 A. No I do not. The price of water is relatively inelastic. The single block rates that  
3 the Company has proposed in this case provide sufficient incentive for customers  
4 to conserve and limit discretionary usage. In addition, inclining block rates are  
5 usually implemented when an utility has a shortage of water or are in drought  
6 conditions. This situation does not apply to MAWC.

7

8 **VI. CUSTOMER RATE DESIGN – WASTEWATER**

9 **Q. Please describe the rate design for the wastewater operations.**

10 A. Class cost of service studies were not performed for wastewater since the  
11 customer base is predominantly residential. The proposed rate design consists  
12 of two tariff groups – one for Arnold, one for the non-Arnold wastewater areas. In  
13 addition, the Company is recommending two rate structures for the non-Arnold  
14 wastewater areas in order to mitigate the increase to the areas with lower  
15 present rates. The first rate structure includes the areas of Cedar Hill, Jefferson  
16 City, Wardsville, Emerald Point, Incline Village, Ozark Meadows, Platte County,  
17 and the second (lower) rate structure includes the areas of Anna Meadows  
18 Maplewood, Fenton, Hickory Hills and Jaxson Estates.

19

20 **Q. Why did the Company propose a different rate zone for those with lower  
21 present rates?**

22 A. In the interest of gradualism, the Company decided to limit the residential  
23 increase for some of the wastewater areas with lower present rates.

24

1 **Q. Has the Company prepared proof of revenue schedules under present and**  
2 **proposed rates?**

3 A. Yes. The proof of revenue shows that the application of the present and  
4 proposed rates to the billing determinants or bill analysis produce the pro forma  
5 present and proposed revenue and proves that the proposed rates filed in the  
6 proposed tariffs recover the requested revenue requirements.

7 Schedule CAS-11 and 12, sponsored by Mr. LaGrand, sets forth the proof  
8 of revenues from the application of present and proposed rates to the customer  
9 consumption analysis. The revenues from these exhibits are brought forward in  
10 Schedule CEH-2.

11

12 **Q. Does this complete your testimony at this time?**

13 A. Yes, it does.

LIST OF CASES IN WHICH CONSTANCE E. HEPPENSTALL TESTIFIED

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client/Utility</u>	<u>Subject</u>
1.	2010	AZ CC	W-01303A-09-0343 and SW-01303A-09-0343	Arizona American Water Company	Rate Consolidation
2.	2010	Pa PUC	R-2010-2179103	City of Lancaster – Bureau of Water	Revenue Requirements
3.	2012	Pa PUC	R-2012-2311725	Hanover Borough	Cost of Service/Rev Reqmts
4.	2012	Pa PUC	R-2012-2310366	City of Lancaster – Sewer Fund	Revenue Requirements
5.	2013	Pa PUC	R-2013-2350509	City of DuBois – Bureau of Water	Revenue Requirements
6.	2013	Pa PUC	R-2013-2390244	City of Bethlehem – Bureau of Water	Revenue Requirements
7.	2014	Pa PUC	R-2014-2418872	City of Lancaster – Bureau of Water	Revenue Requirements
8.	2014	Pa PUC	R-2014-2428304	Hanover Borough	Revenue and Revenue Requirements
9.	2015	KY PSC	Case No.2015-000143	Northern Kentucky Water District	Cost of Service
10.	2016	Pa PUC	R-2016-2554150	City of DuBois – Bureau of Water	Cost of Service/Revenue Reqmts
11.	2016	AZ CC	WS-01303A-16-0145	EPCOR Water Arizona, Inc.	Cost of service



MISSOURI-AMERICAN WATER COMPANY

St. Louis, Missouri

WATER OPERATIONS

COST OF SERVICE ALLOCATION STUDY  
FOR THE TEST YEAR ENDED MAY 31, 2019

GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC

Harrisburg, Pennsylvania



*Excellence Delivered As Promised*

June 30, 2017

Missouri-American Water Company  
727 Craig Road  
St. Louis, MO 63141

Attention: Ms. Cheryl Norton

Ladies & Gentlemen:

Pursuant to your request, we have conducted a cost of service allocation study based on the consolidated water utility revenue requirements estimated for the test year ended May 31, 2019.

The attached report presents the results of the allocation study, as well as supporting schedules which set forth the detailed cost allocation calculations. Schedule A presents a comparison of the cost of service by customer classification with the pro forma revenues produced by each classification under present and proposed rates.

Respectfully submitted,

GANNETT FLEMING VALUATION  
AND RATE CONSULTANTS, LLC

A handwritten signature in black ink, appearing to read 'C. Heppenstall', written over a faint circular stamp.

CONSTANCE E. HEPPENSTALL  
Project Manager, Rate Studies

CEH:mlw

Attachment

062467

Gannett Fleming Valuation and Rate Consultants, LLC

P.O. Box 67100 • Harrisburg, PA 17106-7100 | 207 Senate Avenue • Camp Hill, PA 17011-2316

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## PART I. INTRODUCTION

PART I. INTRODUCTION  
MISSOURI-AMERICAN WATER COMPANY  
COST OF SERVICE ALLOCATION STUDY  
FOR THE TEST YEAR ENDED MAY 31, 2019

PART I. INTRODUCTION

PLAN OF REPORT

The report sets forth the results of the cost of service allocation study based on the consolidated state-wide revenue requirements and district specific revenue requirements for water utility operations as of May 31, 2019, for Missouri-American Water Company. Part I, Introduction, contains statements with respect to the basis of the study, the procedures employed, and a summary of the results of the study. Part II, Cost of Service by Customer Classification, presents detailed schedules of the allocation of costs to customer classifications, as well as the bases for the allocations for the consolidated state-wide revenue requirements. Schedule A in Part II summarizes the cost allocation and the revenues produced under present and proposed rates.

BASIS OF STUDY

The purpose of the cost allocation study was to determine the relative cost of service responsibilities of the several customer classifications based on considerations of quantity of water consumed, variability of rate of consumption, and costs associated with customer metering, billing and accounting. The allocation study incorporated generally-accepted principles and procedures for allocating the several categories of cost to customer classifications in proportion to each classification's use of facilities, commodities and services required in providing water service.

## ALLOCATION PROCEDURES

The allocation studies were based on the Base-Extra Capacity Method for allocating costs to customer classifications. The method is described in the 2017 and prior editions of the Water Rates Manual published by the American Water Works Association. The four basic categories of cost responsibility are base, extra capacity, customer, and fire protection costs. The following discussion presents a brief description of these costs and the manner in which they were allocated.

Base Costs are costs that tend to vary with the quantity of water used, plus costs associated with supplying, treating, pumping, and distributing water to customers under average load conditions, without the elements necessary to meet peak demands. Base costs were allocated to customer classifications on the basis of average daily usage.

Extra Capacity Costs are costs associated with meeting usage requirements in excess of the average. They include operating and capital costs for additional plant and system capacity beyond that required for average use. The extra capacity costs in this study are subdivided into costs necessary to meet maximum day extra demand and costs to meet maximum hour extra demand. The extra capacity costs were allocated to customer classifications on the bases of each classification's maximum day and hour usage in excess of average usage.

Customer Costs are costs associated with serving customers regardless of their usage or demand characteristics. Customer costs include the operating and capital costs related to meters and services, meter reading costs, and billing and collecting costs. The customer costs were allocated on the bases of the capital cost of meters and services, and the number of customers.

Fire Protection Costs are costs associated with providing the facilities to meet the potential peak demand of fire protection service. Fire Protection costs are subdivided into costs to meet Public Fire Protection and Private Fire Protection demands. The extra capacity costs assigned to fire protection service were allocated to Public and Private Fire Protection on the basis of the total relative demands of the hydrants and fire service lines, sized to provide fire protection.

#### RESULTS OF STUDY

The results of the cost of service allocation studies is set forth in Part II. The data summarized in Schedule A, Comparison of Pro Forma Cost of Service with Revenues Under Present and Proposed Rates for the Test Year Ended May 31, 2019 for each cost of service study, constitute the principal results of the cost allocation studies and subsequent rate design.

The cost of service by customer classification shown in column 2 of Schedule A is developed in Schedule B, Cost of Service for the Twelve Months Ended May 31, 2019, Allocated to Customer Classifications, for each study. The allocation of the total cost of service to the several customer classifications was performed by applying the allocation factors referenced in column 2 of Schedule B to the cost of service set forth in column 3. The bases for the allocation factors are presented in Schedule C.

Schedule D sets forth the experienced average day and maximum day system sendout and the maximum day ratios through 2016. Schedule E presents the basis for allocating demand related costs of fire service to private and public fire protection classifications.

PART II. COST OF SERVICE BY CUSTOMER CLASSIFICATION



MISSOURI-AMERICAN WATER COMPANY  
ALL WATER DISTRICTS

COMPARISON OF COST OF SERVICE WITH REVENUES UNDER PRESENT AND PROPOSED RATES  
FOR THE TEST YEAR ENDED MAY 31, 2019

Customer Classification (1)	Cost of Service		Revenues, Present Rates		Revenues, Proposed Rates		Proposed Increase	
	Amount (Schedule B) (2)	Percent (3)	Amount (4)	Percent (5)	Amount (6)	Percent (7)	Amount (8)	Percent Increase (9)
	Residential	\$ 250,124,636	71.4%	\$ 177,161,196	67.8%	\$ 242,660,412	69.3%	\$ 65,499,216
Non-Residential	70,489,417	20.1%	57,675,916	22.0%	76,939,713	22.0%	19,263,797	33.4%
Rate J	17,765,420	5.1%	15,173,474	5.8%	17,681,116	5.1%	2,507,642	16.5%
Sales for Resale	7,062,334	2.0%	6,865,390	2.6%	7,725,641	2.2%	860,251	12.5%
Private Fire	4,565,696	1.3%	5,000,939	1.9%	5,000,181	1.4%	(758)	0.0%
<b>Total Sales</b>	<b>350,007,504</b>	<b>99.9%</b>	<b>261,876,916</b>	<b>100.1%</b>	<b>350,007,064</b>	<b>100.0%</b>	<b>88,130,148</b>	<b>33.7%</b>
Other Revenues	4,154,107		3,420,164		4,154,107		733,943	21.5%
Contract Revenues	5,270,114		5,022,927		5,270,114		247,187	4.9%
<b>Total</b>	<b>\$ 359,431,725 *</b>		<b>\$ 270,320,007</b>		<b>\$ 359,431,285</b>		<b>\$ 89,111,278</b>	<b>33.0%</b>

\* Includes \$79,471 Hickory Hill Sewer Transfer.

MISSOURI-AMERICAN WATER COMPANY  
ALL WATER DISTRICTS  
COST OF SERVICE FOR THE TWELVE MONTHS ENDED MAY 31, 2019 ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)	Residential (4)	Non Residential (5)	Rate J (6)	Sales for Resale (7)	Fire Protection	
							Private (8)	Public (9)
<b>OPERATION AND MAINTENANCE EXPENSES</b>								
<b>SOURCE OF SUPPLY EXPENSES</b>								
Super & Eng Oper SS - Labor	2	\$ 305	\$ 196	\$ 67	\$ 28	\$ 14	\$ 0	\$ 1
Labor & Exp Oper SS - Labor	2	165,679	106,416	36,135	15,044	7,505	133	447
Misc Exp Oper SS	2	8,647	5,654	1,886	785	392	7	23
Purchased Water	1	683,258	396,631	154,143	90,327	37,374	1,093	3,690
<b>TOTAL SS EXPENSE - OPERATION</b>		<b>857,889</b>	<b>508,797</b>	<b>192,230</b>	<b>106,183</b>	<b>45,285</b>	<b>1,233</b>	<b>4,161</b>
Purch Fuel Power for SS	1	6,551,747	3,803,289	1,478,074	866,141	358,381	10,483	35,379
Rents Oper SS	2	18,653	11,981	4,058	1,694	845	15	50
Super & Eng Maint SS - Labor	2	294	189	64	27	13	0	1
Collect & Impound Maint SS - Labor	2	756	486	165	69	34	1	2
Lake, River & Oth Maint SS - Labor	2	258	166	56	23	12	0	1
Wells & Springs Maint SS - Labor	2	132,111	84,855	28,813	11,996	5,985	106	357
Infiltr Gall & Tunnels Maint SS - Labor	2	611	392	133	55	28	0	2
Supply Mains Maint SS - Labor	2	240	154	52	22	11	0	1
Misc Plant Maint SS - Labor	2	379,656	243,853	82,803	34,473	17,198	304	1,025
Misc Plant Maint SS	2	287,177	184,454	62,633	26,076	13,009	230	775
<b>TOTAL SS EXPENSE - MAINTENANCE</b>		<b>7,371,503</b>	<b>4,329,818</b>	<b>1,656,863</b>	<b>940,575</b>	<b>395,516</b>	<b>11,139</b>	<b>37,593</b>
<b>TOTAL SS EXPENSE</b>		<b>8,229,392</b>	<b>4,838,615</b>	<b>1,849,093</b>	<b>1,046,758</b>	<b>440,801</b>	<b>12,372</b>	<b>41,754</b>
<b>POWER AND PUMPING EXPENSES</b>								
Super & Eng Oper P	3	110,187	67,721	22,996	9,564	4,771	1,212	3,923
Fuel for Power Prod	1	12,680	7,361	2,861	1,676	694	20	68
Labor & Exp Oper Pwr Prod - Labor	3	267	164	56	23	12	3	10
Purch Fuel Power for Pump	1	4,884,898	2,835,683	1,102,033	645,784	267,204	7,816	26,378
Labor & Exp Oper Pump - Labor	3	1,655,410	1,017,415	345,484	143,690	71,679	18,210	58,933
Rents Oper P	3	1,677	1,031	350	146	73	18	60
<b>TOTAL PUMPING EXPENSE - OPERATION</b>		<b>6,665,119</b>	<b>3,929,375</b>	<b>1,473,779</b>	<b>800,882</b>	<b>344,432</b>	<b>27,279</b>	<b>89,371</b>

MISSOURI-AMERICAN WATER COMPANY  
 ALL WATER DISTRICTS  
 COST OF SERVICE FOR THE TWELVE MONTHS ENDED MAY 31, 2019 ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)	Residential (4)	Non Residential (5)	Rate J (6)	Sales for Resale (7)	Fire Protection	
							Private (8)	Public (9)
Super & Eng Maint P	3	98,577	60,585	20,573	8,556	4,268	1,084	3,509
Struct & Improve Maint P - Labor	3	103,330	63,507	21,565	8,969	4,474	1,137	3,679
Power Production Maintenance - Labor	3	81	50	17	7	4	1	3
Power Production Maintenance	3	1,529	940	319	133	66	17	54
Pump Equip Maint P - Labor	3	469,199	288,370	97,922	40,726	20,316	5,161	16,703
Pump Equip Maint P	3	66,064	40,603	13,788	5,734	2,861	727	2,352
<b>TOTAL PUMPING EXPENSES - MAINTENANCE</b>		<b>738,760</b>	<b>454,054</b>	<b>154,183</b>	<b>64,126</b>	<b>31,989</b>	<b>8,127</b>	<b>26,301</b>
<b>TOTAL PUMPING EXPENSES</b>		<b>7,403,899</b>	<b>4,383,429</b>	<b>1,627,963</b>	<b>865,008</b>	<b>376,421</b>	<b>35,406</b>	<b>115,672</b>
<b>WATER TREATMENT</b>								
Super & Eng Oper WT	2	261,010	167,647	56,926	23,700	11,824	209	705
Chemicals	1	9,698,605	5,630,040	2,188,005	1,282,156	530,514	15,518	52,372
Labor & Exp Oper WT - Labor	2	3,327,016	2,136,942	725,622	302,093	150,714	2,662	8,883
Labor & Exp Oper WT	2	504,583	324,094	110,050	45,816	22,858	404	1,362
Misc Exp Oper WT	2	544,666	349,967	118,835	49,474	24,682	436	1,471
Misc Exp Oper WT - Waste Disposal	1	694,160	402,960	156,602	91,768	37,971	1,111	3,748
Rents Oper WT	2	152,942	98,235	33,357	13,887	6,928	122	413
<b>TOTAL WT EXPENSE - OPERATION</b>		<b>15,183,162</b>	<b>9,109,885</b>	<b>3,389,398</b>	<b>1,808,893</b>	<b>785,460</b>	<b>20,461</b>	<b>69,055</b>
Super & Eng Maint WT	2	1,601,736	1,028,795	349,339	145,438	72,559	1,281	4,325
Struct & Improve Maint WT - Labor	2	2,091	1,343	456	190	95	2	6
WT Equip Maint WT	2	364,054	233,832	79,400	33,056	16,492	291	933
<b>TOTAL WT EXPENSE - MAINTENANCE</b>		<b>1,967,881</b>	<b>1,263,970</b>	<b>429,195</b>	<b>178,684</b>	<b>89,145</b>	<b>1,574</b>	<b>5,313</b>

MISSOURI-AMERICAN WATER COMPANY  
 ALL WATER DISTRICTS  
 COST OF SERVICE FOR THE TWELVE MONTHS ENDED MAY 31, 2019 ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)	Residential (4)	Non Residential (5)	Rate J (6)	Sales for Resale (7)	Fire Protection	
							Private (8)	Public (9)
<b>TOTAL WT EXPENSE</b>		17,151,063	10,373,855	3,818,593	1,987,577	874,635	22,035	74,368
<b>TRANSMISSION AND DISTRIBUTION EXPENSES</b>								
Super & Eng Oper TD	10	96,692	69,541	18,739	2,292	503	2,485	3,133
Storage Facility Exp - Labor	5	581	329	128	43	11	16	53
TD Lines Exp - Labor	6	2,020,583	1,288,728	488,375	73,347	17,579	35,764	116,790
TD Lines Exp	6	123,324	78,656	29,807	4,477	1,073	2,183	7,128
Meter Expense - Labor	8	1,076,070	912,400	152,156	10,653	861	0	0
Customer Install Exp - Labor	9	604,544	471,000	70,792	2,297	302	60,152	0
Misc Exp Oper TD - Labor	10	1,743,841	1,254,170	337,956	41,329	9,068	44,817	56,500
Misc Exp Oper TD	10	(245,211)	(176,356)	(47,522)	(5,812)	(1,275)	(6,302)	(7,945)
Rents Oper TD	10	8,155	5,865	1,580	193	42	210	264
<b>TOTAL T &amp; D EXPENSE OPERATION</b>		<b>5,428,579</b>	<b>3,904,334</b>	<b>1,052,013</b>	<b>128,820</b>	<b>28,164</b>	<b>139,325</b>	<b>175,924</b>

MISSOURI-AMERICAN WATER COMPANY  
 ALL WATER DISTRICTS  
 COST OF SERVICE FOR THE TWELVE MONTHS ENDED MAY 31, 2019 ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)	Residential		Rate J (6)	Sales for Resale (7)	Fire Protection	
			(4)	Non Residential (5)			Private (8)	Public (9)
Super & Eng Maint TD	11	76,503	45,542	14,834	2,050	482	1,905	11,690
Struct & Improve Maint TD - Labor	11	160	95	31	4	1	4	24
Dist Res Stand Maint TD - Labor	5	135	77	30	10	3	4	12
TD Main Maint TD - Labor	6	309,232	197,228	74,741	11,225	2,690	5,473	17,874
TD Main Maint TD	6	2,559,625	1,632,529	618,661	92,914	22,269	45,305	147,946
Fire Main Maint TD - Labor	7	493	0	0	0	0	0	493
Services Maint TD - Labor	9	499,277	388,987	58,465	1,897	250	49,678	0
Meters Maint TD - Labor	8	216,197	183,313	30,570	2,140	173	0	0
Hydrants Maint TD - Labor	7	450,335	0	0	0	0	0	450,335
Misc Plant Maint TD - Labor	11	1,434,980	854,244	278,243	38,457	9,040	35,731	219,265
Misc Maint TD	11	6,419,681	3,821,636	1,244,776	172,047	40,444	159,850	980,927
<b>TOTAL T &amp; D EXPENSE - MAINTENANCE</b>		<b>11,966,618</b>	<b>7,123,651</b>	<b>2,320,352</b>	<b>320,747</b>	<b>75,352</b>	<b>297,951</b>	<b>1,828,567</b>
<b>TOTAL T &amp; D EXPENSE</b>		<b>17,395,197</b>	<b>11,027,985</b>	<b>3,372,364</b>	<b>449,566</b>	<b>103,516</b>	<b>437,275</b>	<b>2,004,490</b>
<b>CUSTOMER ACCOUNTS</b>								
Supervision CA	12	69,039	63,889	4,122	48	7	973	0
Meter Reading Exp CA - Labor	13	2,310,225	2,168,608	139,769	1,617	231	0	0
Meter Reading Exp CA	13	5,859	5,500	354	4	1	0	0
Cust Rec & Collection CA - Labor	12	1,000,671	926,021	59,740	700	100	14,109	0
Cust Rec & Collection CA	12	2,813,923	2,604,004	167,991	1,970	281	39,676	0
Uncollectible Accts	12	2,756,914	2,551,248	164,588	1,930	276	38,872	0
Misc Cust Accts Exp CA - Labor	12	12,550	11,614	749	9	1	177	0
Misc Cust Accts Exp CA	12	40,235	37,233	2,402	28	4	567	0
Cust Serv & Info Exp CA - Labor	12	328	304	20	0	0	5	0
<b>TOTAL CUSTOMER ACCOUNTING EXPENSE</b>		<b>9,009,744</b>	<b>8,368,421</b>	<b>539,735</b>	<b>6,307</b>	<b>901</b>	<b>94,381</b>	<b>0</b>

MISSOURI-AMERICAN WATER COMPANY  
ALL WATER DISTRICTS  
COST OF SERVICE FOR THE TWELVE MONTHS ENDED MAY 31, 2019 ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)	Residential (4)	Non Residential (5)	Rate J (6)	Sales for Resale (7)	Fire Protection	
							Private (8)	Public (9)
<b>ADMINISTRATIVE AND GENERAL EXPENSES</b>								
Salaries AG	14	9,757,866	6,896,880	1,630,539	366,890	150,271	150,271	563,029
Salaries AG - Other	14		0	0	0	0	0	0
Other Supplies & Exp AG	14	4,071,961	2,878,062	680,425	153,106	62,708	62,708	234,952
Mgmt Fees-Admin	14	21,933,821	15,502,825	3,665,141	824,712	337,781	337,781	1,265,581
Mgmt Fees-Customer Service	12	5,978,313	5,532,331	356,905	4,185	598	84,294	0
Mgmt Fees-Belleville Lab	2	126,216	81,068	27,528	11,460	5,718	101	341
Mgmt Fees- Employee	16	2,745,960	1,923,271	471,207	118,900	51,349	39,816	141,417
Outside Services AG	14	7,195,922	5,086,078	1,202,439	270,567	110,817	110,817	415,205
Ins Gen Liab Oper AG	14		0	0	0	0	0	0
Ins Work Comp AG	16		0	0	0	0	0	0
Ins Other Oper AG	14		0	0	0	0	0	0
Property Insurance	14	6,305,363	4,456,631	1,053,626	237,082	97,103	97,103	363,819
Injuries & Damages	16	(552)	(394)	(66)	(24)	(11)	(8)	(29)
Employee Pension & Benefits	16	9,545,346	6,685,560	1,637,981	413,313	178,498	138,408	491,585
Reg Commission Exp	19	574,305	384,318	101,709	28,404	12,175	7,466	29,232
Rents AG	14	119,323	84,337	19,939	4,487	1,838	1,838	6,885
Goodwill Advertising Exp	14	14,766	10,437	2,467	555	227	227	852
Misc Exp AG	14	1,956,827	1,383,085	326,986	73,577	30,135	30,135	112,909
Research & Development	14	3,671	2,595	613	138	57	57	212
<b>TOTAL A &amp; G OPERATIONS</b>		<b>70,329,098</b>	<b>50,917,063</b>	<b>11,177,410</b>	<b>2,508,357</b>	<b>1,039,264</b>	<b>1,061,014</b>	<b>3,625,891</b>
General Plant Maint AG - Labor	14	438,856	310,183	73,333	16,501	6,758	6,758	25,322
General Plant Maint AG	14	282,569	199,720	47,217	10,625	4,352	4,352	16,304
<b>TOTAL A &amp; G EXPENSE - MAINTENANCE</b>		<b>721,425</b>	<b>509,903</b>	<b>120,550</b>	<b>27,126</b>	<b>11,110</b>	<b>11,110</b>	<b>41,626</b>
<b>TOTAL A &amp; G EXPENSE</b>		<b>71,050,523</b>	<b>51,426,966</b>	<b>11,297,960</b>	<b>2,535,482</b>	<b>1,050,374</b>	<b>1,072,123</b>	<b>3,667,517</b>
<b>Total Operation &amp; Maintenance Expenses</b>		<b>130,239,618</b>	<b>90,419,271</b>	<b>22,505,707</b>	<b>6,890,699</b>	<b>2,846,648</b>	<b>1,673,592</b>	<b>5,903,901</b>

MISSOURI-AMERICAN WATER COMPANY  
ALL WATER DISTRICTS  
COST OF SERVICE FOR THE TWELVE MONTHS ENDED MAY 31, 2019 ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)	Residential (4)	Non Residential (5)	Rate J (6)	Sales for Resale (7)	Fire Protection	
							Private (8)	Public (9)
<b>DEPRECIATION EXPENSE</b>								
Struct & Imp SS	2	372,524	239,272	81,247	33,825	16,875	298	1,006
Struct & Imp P	3	842,664	517,901	175,864	73,143	36,487	9,269	29,999
Struct & Imp WT	2	3,054,283	1,961,766	666,139	277,329	138,359	2,443	8,247
Struct & Imp TD	6	151,135	96,394	36,529	5,486	1,315	2,675	8,736
Struct & Imp Offices	14	150,621	106,459	25,169	5,663	2,320	2,320	8,691
Gen Structures HVAC	14	7,682	5,429	1,284	289	118	118	443
Struct & Imp Leasehold	14	522	369	87	20	8	8	30
Struct & Imp Store,Shop,Gar	14	448,800	317,212	74,994	16,875	6,912	6,912	25,896
Struct & Imp Misc	14	125,532	88,726	20,976	4,720	1,933	1,933	7,243
Collect & Impounding	1	419	243	95	55	23	1	2
Lake, River & Other Intakes	2	278,752	179,043	60,796	25,311	12,627	223	753
Wells & Springs	2	217,979	140,008	47,541	19,792	9,874	174	589
Infiltration Galleries & Tunnels	2	32	21	7	3	1	0	0
Supply Mains	2	322,998	207,461	70,446	29,328	14,632	258	872
Power Generation Equip	3	560,525	344,499	116,982	48,654	24,271	6,166	19,955
Pump Equip Steam	3	76,930	47,281	16,055	6,677	3,331	846	2,739
Pump Equip Electric	3	1,361,211	836,600	284,085	118,153	58,940	14,973	48,459
Pump Equip Diesel	3	47,867	29,419	9,990	4,155	2,073	527	1,704
Pump Equip Hydraulic	3	11,344	6,972	2,367	985	491	125	404
Pump Equip Other	3	55,645	34,199	11,613	4,830	2,409	612	1,981
Pump Equip WT	2	0	0	0	0	0	0	0
Pump Equip TD	6	0	0	0	0	0	0	0
WT Equip	2	3,907,434	2,509,745	852,211	354,795	177,007	3,126	10,550
WT Equip Other	2	49,058	31,510	10,700	4,454	2,222	39	132
Dist Reservoirs & Standpipe	5	616,242	349,347	135,758	45,725	11,893	17,255	56,263
TD Mains Not Classified by	6	96,308	61,426	23,278	3,496	838	1,705	5,567
TD Mains less than 10-Inch	4	10,406,050	6,696,293	2,602,553	246,623	0	201,877	658,703
TD Mains 10-Inch and Greater	3	5,285,914	3,248,723	1,103,170	458,817	228,880	58,145	188,179
Fire Mains	7	9,269	0	0	0	0	0	9,269
Services	9	1,180,957	920,084	138,290	4,488	590	117,505	0
Meters	8	3,321,411	2,816,224	469,648	32,882	2,657	0	0
Meter Installations	8	707,630	599,999	100,059	7,006	566	0	0
Hydrants	7	1,475,828	0	0	0	0	0	1,475,828
Other Transmission & Distribution Plant	6	1,144	730	276	42	10	20	66
Other P/E SS	2	86	55	19	8	4	0	0
Office Furniture & Equip	14	48,735	34,446	8,144	1,832	751	751	2,812
Comp & Periph Equip	14	2,208,707	1,561,114	369,075	83,047	34,014	34,014	127,442
Computer Software	14	1,351,872	955,503	225,898	50,830	20,819	20,819	78,003
Computer Hardware and Software	14	18,243	12,894	3,048	686	281	281	1,053
BST Intal Investment	14	4,297,759	3,037,656	718,155	161,596	66,185	66,185	247,931
BST Intal Investment - CIS	12	2,165,036	2,003,525	129,253	1,516	217	30,527	0
Other Office Equipment	14	54,113	38,247	9,042	2,035	833	833	3,122
Trans Equip Lt Duty Trks	14	558,101	394,466	93,259	20,985	8,595	8,595	32,202
Trans Equip Other	14	189,689	134,072	31,697	7,132	2,921	2,921	10,845
Stores Equipment	14	30,917	21,852	5,166	1,162	476	476	1,784
Tools,Shop,Garage Equip	14	343,443	242,746	57,389	12,913	5,269	5,269	19,817

MISSOURI-AMERICAN WATER COMPANY  
 ALL WATER DISTRICTS  
 COST OF SERVICE FOR THE TWELVE MONTHS ENDED MAY 31, 2019 ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)	Residential (4)	Non Residential (5)	Rate J (6)	Sales for Resale (7)	Fire Protection	
							Private (8)	Public (9)
Laboratory Equipment	2	57,565	36,974	12,555	5,227	2,608	46	155
Power Operated Equipment	14	54,380	38,436	9,087	2,045	837	837	3,138
Comm Equip Non-Telephone	14	314,913	222,580	52,622	11,841	4,850	4,850	18,170
Comm Equip Telephone	14	5,711	4,036	954	215	88	88	330
Misc Equipment	14	215,383	152,232	35,990	8,098	3,317	3,317	12,428
Other Tangible Property	17	731	467	152	36	14	10	52
<b>Total Depreciation Expense</b>		<b>47,060,111</b>	<b>31,284,657</b>	<b>6,699,716</b>	<b>2,204,825</b>	<b>909,763</b>	<b>629,393</b>	<b>3,131,757</b>



**MISSOURI-AMERICAN WATER COMPANY**  
**ALL WATER DISTRICTS**  
**COST OF SERVICE FOR THE TWELVE MONTHS ENDED MAY 31, 2019 ALLOCATED TO CUSTOMER CLASSIFICATIONS**

Account (1)	Factor Ref. (2)	Cost of Service (3)	Residential (4)	Non Residential (5)	Rate J (6)	Sales for Resale (7)	Fire Protection	
							Private (8)	Public (9)
Amort-Other UP	18	143,575	91,802	29,892	7,050	2,757	1,881	10,194
Amort-UPAA	2		0	0	0	0	0	0
Amort-Property Losses	2	191,554	123,035	41,778	17,393	8,677	153	517
<b>Taxes Other Than Income</b>								
Utility Reg Assessment Fee	19	3,049,558	2,093,827	540,077	156,137	64,651	39,644	155,223
Property Taxes	18	24,419,960	16,614,122	5,054,236	1,199,020	468,863	319,901	1,733,817
Payroll Taxes	16	2,301,223	1,611,777	394,890	99,643	43,033	33,368	118,513
Other Taxes & Licenses	14	(95,774)	(67,693)	(16,004)	(3,601)	(1,475)	(1,475)	(5,526)
Gross Receipts Tax	19		0	0	0	0	0	0
<b>Total Taxes, Other Than Income</b>		<b>28,674,967</b>	<b>19,252,032</b>	<b>6,003,198</b>	<b>1,451,199</b>	<b>575,072</b>	<b>391,439</b>	<b>2,002,026</b>
<b>Income Taxes</b>	18	<b>45,943,211</b>	<b>29,376,089</b>	<b>9,565,377</b>	<b>2,255,812</b>	<b>892,110</b>	<b>601,856</b>	<b>3,261,968</b>
<b>Utility Income Available for Return</b>	18	<b>106,099,017</b>	<b>67,839,711</b>	<b>22,089,815</b>	<b>5,209,462</b>	<b>2,037,101</b>	<b>1,389,897</b>	<b>7,533,030</b>
<b>Total Cost of Service</b>		<b>359,352,253</b>	<b>238,386,598</b>	<b>69,135,483</b>	<b>18,036,440</b>	<b>7,262,128</b>	<b>4,688,211</b>	<b>21,843,394</b>
<b>Less: Other Water Revenues</b>	19	<b>4,154,107</b>	<b>2,852,210</b>	<b>735,692</b>	<b>212,690</b>	<b>88,067</b>	<b>54,003</b>	<b>211,444</b>
Contract Sales	19	5,270,114	3,618,460	933,337	269,830	111,726	68,511	268,249
<b>Total Other Water Revenues</b>		<b>9,424,221</b>	<b>6,470,670</b>	<b>1,669,030</b>	<b>482,520</b>	<b>199,793</b>	<b>122,515</b>	<b>479,693</b>
<b>Total Cost of Service Related to Sales of Water</b>		<b>\$ 349,928,032</b>	<b>\$ 231,915,927</b>	<b>\$ 67,466,454</b>	<b>\$ 17,553,920</b>	<b>\$ 7,062,334</b>	<b>\$ 4,565,696</b>	<b>\$ 21,363,701</b>
Wastewater Allocation	DA	79,472	79,472	0	0	0	0	0
Reallocation of Public Fire	20	0	18,129,237	3,022,964	211,501	0	0	(21,363,701)
<b>Total</b>		<b>\$ 350,007,504</b>	<b>\$ 250,124,636</b>	<b>\$ 70,489,417</b>	<b>\$ 17,765,420</b>	<b>\$ 7,062,334</b>	<b>\$ 4,565,696</b>	<b>\$ -</b>

**MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS**

**FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS**

**FACTOR 1. ALLOCATION OF COSTS WHICH VARY WITH THE AMOUNT OF WATER CONSUMED.**

Factors are based on the pro forma test year average daily consumption for each customer classification.

Customer Classification (1)	Average Daily Consumption, 100 Gallons (2)	Allocation Factor (3)
Residential	826,223	0.5805
Non-Residential	321,191	0.2256
Rate J	188,245	0.1322
Sales for Resale	77,916	0.0547
Private Fire	2,340	0.0016
Public Fire	7,639	0.0054
<b>Total</b>	<b><u>1,423,554</u></b>	<b><u>1.0000</u></b>

**FACTOR 2. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND  
MAXIMUM DAY EXTRA CAPACITY FUNCTIONS.**

Factors are based on the weighting of the factors for average daily consumption (Factor 1) and the factors

Customer Classification (1)	Average Daily Consumption		Maximum Day Extra Capacity		Allocation Factor (6)=(3)+(5)
	Allocation Factor 1 (2)	Weighted Factor (3)=(2)x 0.5000	Allocation Factor (4)	Weighted Factor (5)=(4)x 0.5000	
Residential	0.5805	0.2902	0.7042	0.3521	0.6423
Non-Residential	0.2256	0.1128	0.2106	0.1053	0.2181
Rate J	0.1322	0.0661	0.0494	0.0247	0.0908
Sales for Resale	0.0547	0.0274	0.0358	0.0179	0.0453
Private Fire	0.0016	0.0008			0.0008
Public Fire	0.0054	0.0027			0.0027
<b>Total</b>	<b><u>1.0000</u></b>	<b><u>0.5000</u></b>	<b><u>1.0000</u></b>	<b><u>0.5000</u></b>	<b><u>1.0000</u></b>

The derivation of the maximum day extra capacity factors in column 4 and the basis for the column 3 and

MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 2. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND  
MAXIMUM DAY EXTRA CAPACITY FUNCTIONS, cont.

Customer Classification	Average Daily Consumption, 100 Gal.	Maximum Day Extra Capacity		
		Factor*	Rate of Flow, Thousand Gal. Per Day	Allocation Factor
(1)	(2)	(3)	(4)=(2)x(3)	(5)
Residential	826,223	1.3	1,074,090	0.7042
Non-Residential	321,191	1.0	321,191	0.2106
Rate J	188,245	0.4	75,298	0.0494
Sales for Resale	77,916	0.7	54,541	0.0358
	<u>1,413,575</u>		<u>1,525,120</u>	<u>1.0000</u>

The weighting of the factors is based on the maximum day ratio of 2.00, based on a review of maximum day ratios experienced during the period 1999 through 2016 (see Schedule D).

	Maximum Day Ratio	Weight
Average Day	1.00	0.5000
Maximum Day Extra Capacity	1.00	0.5000
Total	<u>2.00</u>	<u>1.0000</u>

\* Ratio of maximum day to average day minus 1.0.

MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 3. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE, MAXIMUM DAY EXTRA CAPACITY AND FIRE PROTECTION FUNCTIONS.

Factors are based on the weighting of the average daily consumption, the maximum day extra capacity demand, and the fire protection demand for each customer classification.

Customer Classification	Average Daily Consumption		Maximum Day Extra Capacity		Fire Protection		Allocation Factor
	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	
(1)	(2)	(3)=(2) X	(4)	(5)=(4) X	(6)	(7)=(6) X	(8)=(3)+(5)+(7)
		0.4784		0.4784		0.0432	
Residential	0.5805	0.2777	0.7042	0.3369			0.6146
Non-Residential	0.2256	0.1079	0.2106	0.1008			0.2087
Rate J	0.1322	0.0632	0.0494	0.0236			0.0868
Sales for Resale	0.0547	0.0262	0.0358	0.0171			0.0433
Private Fire	0.0016	0.0008			0.2345	0.0102	0.0110
Public Fire	0.0054	0.0026			0.7655	0.0330	0.0356
Total	1.0000	0.4784	1.0000	0.4784	1.0000	0.0432	1.0000

MISSOURI-AMERICAN WATER COMPANY  
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FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 3. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE, MAXIMUM DAY EXTRA CAPACITY AND FIRE PROTECTION FUNCTIONS, cont.

The weighting of the factors is based on the potential demand of general and fire protection service. The bases for the potential demand of general service are the maximum day ratio of 1.90 and the average daily system sendout for 2016 of 199.6 MGD. The system demand for fire protection is 30,000 Gallons per minute for 10 hours.

	<u>Ratio</u>	<u>Rate of Flow, (GPD)</u>	<u>Weight</u>
Average Day	1.00	199,570,794	0.4784
Maximum Day Extra Capacity	<u>1.00</u>	<u>199,570,794</u>	<u>0.4784</u>
Subtotal	<u>2.00</u>	399,141,588	0.9568
Fire Protection		<u>18,000,000</u>	<u>0.0432</u>
Total		<u>417,141,588</u>	<u>1.0000</u>

The public and private fire protection allocation factors in column 6 on the previous page are based on the relative potential demands (see Schedule E).

**MISSOURI-AMERICAN WATER COMPANY  
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FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 4. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND MAXIMUM HOUR EXTRA CAPACITY FUNCTIONS.

Factors are based on the weighting of the average daily consumption, the maximum day extra capacity demand, and the fire protection demand for each customer classification.

Customer Classification	Average Hourly Consumption			Maximum Hour Extra Capacity		Fire Protection		Allocation Factor
	100 Gallons	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	
(1)	(2)	(3)	(4)=(3) X 0.3681	(5)	(6)=(5) X 0.5522	(7)	(8)=(7) X 0.0797	(9)=(4)+(6)+(8)
Residential	34,426.0	0.6837	0.2517	0.7096	0.3918			0.6435
Non-Residential	13,383.0	0.2658	0.0978	0.2758	0.1523			0.2501
Rate J	2,128.2	0.0423	0.0156	0.0146	0.0081			0.0237
Sales for Resale	0.0	0.0000	0.0000	0.0000	0.0000			0.0000
Private Fire	97.5	0.0019	0.0007			0.2345	0.0187	0.0194
Public Fire	318.3	0.0063	0.0023			0.7655	0.0610	0.0633
<b>Total</b>	<b>50,353.0</b>	<b>1.0000</b>	<b>0.3681</b>	<b>1.0000</b>	<b>0.5522</b>	<b>1.0000</b>	<b>0.0797</b>	<b>1.0000</b>

The maximum hour extra capacity factors in column 5 are determined as follows:

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Schedule C

**MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS**

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

**FACTOR 4. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND  
MAXIMUM HOUR EXTRA CAPACITY FUNCTIONS, cont.**

The weighting of the factors is based on the potential demand of general and fire protection service. The bases for the potential demand of general service are the maximum hour ratio of 2.5 and the average daily system sendout for 2016 of 199.6 MGD. The system demand for fire protection is 30,000 gallons per minute.

	Ratio	Rate of Flow, (GPM)	Weight
Average Hour	1.00	138,591	0.3681
Maximum Hour Extra Capacity	<u>1.50</u>	<u>207,887</u>	<u>0.5522</u>
Subtotal	<u>2.50</u>	346,478	0.9203
Fire Protection		<u>30,000</u>	<u>0.0797</u>
Total		<u>376,478</u>	<u>1.0000</u>

The maximum hour extra capacity factors in column 5 of the previous page are determined as follows:

Customer Classification	Average Hourly Consumption Thousand Gal.	Maximum Hour Extra Capacity		
		Factor*	1,000 Gallons Per Hour	Allocation Factor
(1)	(2)	(3)	(4)=(2)x(3)	(5)
Residential	34,426.0	3.0	103,278.0	0.7096
Non-Residential	13,383.0	3.0	40,149.0	0.2758
Rate J	2,128.2	1.0	2,128.2	0.0146
Total	<u>49,937.2</u>		<u>145,555.2</u>	<u>1.0000</u>

\* Ratio of Maximum Hour To Average Hour Minus 1.0.

The public and private fire protection allocation factors in column 7 on the previous page are based on the relative potential demands (see Schedule E).

**MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS**

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 5. ALLOCATION OF COSTS ASSOCIATED WITH STORAGE FACILITIES.

Factors are based on the weighting of the average hourly consumption, the maximum hour extra capacity demand, and the fire protection demand for each customer classification.

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Customer Classification	Average Hourly Consumption			Maximum Hour Extra Capacity		Fire Protection		Allocation Factor
	100 Gallons	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	
(1)	(2)	(3)	(4)=(3) X	(5)	(6)=(5) X	(7)	(8)=(7) X	(9)=(4)+(6)+(8)
			0.3533		0.5299		0.1168	
Residential	34,426.0	0.5805	0.2051	0.6827	0.3618			0.5669
Non-Residential	13,383.0	0.2256	0.0797	0.2654	0.1406			0.2203
Rate J	7,843.5	0.1322	0.0467	0.0519	0.0275			0.0742
Sales for Resale	3,246.5	0.0547	0.0193	0.0000	0.0000			0.0193
Private Fire	97.5	0.0016	0.0006			0.2345	0.0274	0.0280
Public Fire	318.3	0.0054	0.0019			0.7655	0.0894	0.0913
<b>Total</b>	<b>59,314.8</b>	<b>1.0000</b>	<b>0.3533</b>	<b>1.0000</b>	<b>0.5299</b>	<b>1.0000</b>	<b>0.1168</b>	<b>1.0000</b>

The weighting of the factors is based on the ratio of the capacity required for a 10 hour demand of fire flow, as related to total storage capacity. The calculation is shown on the following page.

Schedule C



MISSOURI-AMERICAN WATER COMPANY  
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FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 5. ALLOCATION OF COSTS ASSOCIATED WITH STORAGE FACILITIES, cont.

The weighting of the factors is based on the ratio of the capacity required for a 10 hour demand of fire flow, as related to total storage capacity.

$$\text{Fire Protection Weight} = \frac{30,000 \text{ GPM} \times 60 \text{ Min.} \times 10 \text{ Hrs.}}{154,122,000 \text{ Gallons}} = 0.1168$$

$$\text{General Service Weight} = 1.0000 - 0.1168 = 0.8832$$

The weighting of the average hourly consumption and maximum hour extra demand for general service is based on the maximum hour ratio, as follows:

	Maximum Hour Ratio	Percent	Weight
Average Hour	1.00	40.00	0.3533
Extra Capacity Maximum Hour	1.50	60.00	0.5299
Total	<u>2.50</u>	<u>100.00</u>	<u>0.8832</u>

Customer Classification	Average Hourly Consumption Thousand Gal.	Maximum Hour Extra Capacity		
		Factor*	1,000 Gallons Per Hour	Allocation Factor
(1)	(2)	(3)	(4)=(2)x(3)	(5)
Residential	34,426.0	3.0	103,278.0	0.6827
Non-Residential	13,383.0	3.0	40,149.0	0.2654
Rate J	7,843.5	1.0	7,843.5	0.0519
Sales for Resale	3,246.5	0.0	0.0	0.0000
	<u>58,899.0</u>		<u>151,270.5</u>	<u>1.0000</u>

\* Ratio of maximum day to average day minus 1.0.

MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 6. ALLOCATION OF COSTS ASSOCIATED WITH TRANSMISSION AND DISTRIBUTION MAINS.

Factors are based on the weighting of the maximum daily consumption with fire, Factor 3, and the maximum hour consumption, Factor 4, for each customer classification, as follows:

Customer Classification	Maximum Daily Consumption w/ Fire		Maximum Hourly Consumption		Allocation Factor
	Allocation Factor 3	Weighted Factor	Allocation Factor 4	Weighted Factor	
	(1)	(2)	(3)=(2)X 0.2010	(4)	
Residential	0.6146	0.1236	0.6435	0.5142	0.6378
Non-Residential	0.2087	0.0419	0.2501	0.1998	0.2417
Rate J	0.0868	0.0174	0.0237	0.0189	0.0363
Sales for Resale	0.0433	0.0087	0.0000	0.0000	0.0087
Private Fire	0.0110	0.0022	0.0194	0.0155	0.0177
Public Fire	0.0356	0.0072	0.0633	0.0506	0.0578
Total	1.0000	0.2010	1.0000	0.7990	1.0000

The weighting of the factors is based on the total footage of mains, designated as either transmission mains or distribution mains, as follows:

	Total Footage of Mains	Weight
Transmission Mains	7,125,940	0.2010
Distribution Mains	28,325,036	0.7990
Total	35,450,976	1.0000

MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 7. ALLOCATION OF COSTS ASSOCIATED WITH FIRE HYDRANTS.

Costs are assigned directly to Rate E.

<u>Customer Classification</u> (1)	<u>Allocation Factor</u> (3)
Public Fire	<u>1.0000</u>
Total	<u><u>1.0000</u></u>

FACTOR 8. ALLOCATION OF COSTS ASSOCIATED WITH METERS.

Factors are based on the relative cost of meters by size and customer classification, as developed on the following page and summarized below.

<u>Customer Classification</u> (1)	<u>5/8" Dollar Equivalents</u> (2)	<u>Allocation Factor</u> (3)
Residential	446,914	0.8479
Non-Residential	74,505	0.1414
Rate J	5,192	0.0099
Sales for Resale	422	0.0008
Private Fire	0	0.0000
Public Fire	<u>0</u>	<u>0.0000</u>
Total	<u><u>527,033</u></u>	<u><u>1.0000</u></u>

MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS

BASIS FOR ALLOCATING METER COSTS TO CUSTOMER CLASSIFICATIONS

Meter Size (1)	5/8" Dollar Equivalent (2)	Residential		Non-Residential		Rate J		Sales for Resale		Private Fire		Total	
		Number of Meters (3)	Weighting (4)=(2)X(3)	Number of Meters (5)	Weighting (6)=(2)X(5)	Number of Meters (7)	Weighting (8)=(2)X(7)	Number of Meters (9)	Weighting (10)=(2)X(9)	Number of Meters (11)	Weighting (12)=(2)X(11)	Number of Meters (13)	Weighting (14)
5/8	1.0	369,179	369,179	12,325	12,325	15	15	1	1		0	381,520	381,520
3/4	2.1	22,227	46,677	3,070	6,447	2	4	0	0		0	25,299	53,128
1	2.0	11,263	22,526	3,817	7,634	7	14	2	4		0	15,089	30,178
1-1/2	3.5	441	1,544	1,279	4,477	4	14	0	0		0	1,724	6,035
2	4.3	1,016	4,369	4,584	19,711	69	297	20	86		0	5,689	24,463
3	7.0	20	140	325	2,275	41	287	4	28		0	390	2,730
4	10.5	18	189	268	2,814	66	693	7	74		0	359	3,770
6	16.8	22	370	187	3,142	55	924	6	101		0	270	4,537
8	64.0	28	1,792	201	12,864	27	1,728	2	128		0	258	16,512
10	64.0	2	128	44	2,816	19	1,216	0	0		0	65	4,160
12	64.0	0	0	0	0	0	0	0	0		0	0	0
Total		<u>404,216</u>	<u>446,914</u>	<u>26,100</u>	<u>74,505</u>	<u>305</u>	<u>5,192</u>	<u>42</u>	<u>422</u>	<u>0</u>	<u>0</u>	<u>430,663</u>	<u>527,033</u>

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Schedule C

MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 9. ALLOCATION OF COSTS ASSOCIATED WITH SERVICES.

Factors are based on the relative cost of services by size and customer classification, as developed on the following page and summarized below.

<u>Customer Classification</u> (1)	<u>3/4" Dollar Equivalents</u> (2)	<u>Allocation Factor</u> (3)
Residential	432,673	0.7791
Non-Residential	64,996	0.1171
Rate J	2,087	0.0038
Sales for Resale	265	0.0005
Private Fire	<u>55,244</u>	<u>0.0995</u>
Total	<u><u>555,265</u></u>	<u><u>1.0000</u></u>

**MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS**

**BASIS FOR ALLOCATING SERVICE COSTS TO CUSTOMER CLASSIFICATIONS**

Service Size (1)	3/4" Dollar Equivalent (2)	Residential		Non-Residential		Rate J		Sales for Resale		Private Fire		Total	
		Number of Services (3)	Weighting (4)=(2)X(3)	Number of Services (5)	Weighting (6)=(2)X(5)	Number of Meters (7)	Weighting (8)=(2)X(7)	Number of Meters (9)	Weighting (10)=(2)X(9)	Number of Meters (11)	Weighting (12)=(2)X(11)	Number of Meters (13)	Weighting (14)
3/4	1.00	391,406	391,406	15,395	15,395	17	17	1	1	0	0	406,802	406,802
1	2.94	11,263	33,113	3,817	11,222	7	21	2	6	0	0	15,082	44,341
1-1/2	4.02	441	1,773	1,279	5,142	4	16	0	0	0	0	1,720	6,915
2	5.55	1,016	5,639	4,584	25,441	69	383	20	111	227	1,260	5,847	32,451
3	5.55	20	111	325	1,804	41	228	4	22	5	28	354	1,965
4	6.37	18	115	268	1,707	66	420	7	45	897	5,714	1,190	7,581
6	9.92	22	218	187	1,855	55	546	6	60	2,938	29,145	3,153	31,278
8	9.92	28	278	201	1,994	27	268	2	20	1,711	16,973	1,942	19,265
10	9.92	2	20	44	436	19	188	0	0	94	932	140	1,388
12 and above	12.16	0	0	0	0	0	0	0	0	98	1,192	98	1,192
<b>Total</b>		<u>404,216</u>	<u>432,673</u>	<u>26,100</u>	<u>64,996</u>	<u>305</u>	<u>2,087</u>	<u>42</u>	<u>265</u>	<u>5,970</u>	<u>55,244</u>	<u>436,328</u>	<u>553,178</u>

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MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 10. ALLOCATION OF TRANSMISSION AND DISTRIBUTION OPERATION SUPERVISION AND ENGINEERING AND MISCELLANEOUS EXPENSES.

Factors are based on transmission and distribution operation expenses other than those being allocated, as follows:

Customer Classification	Transmission & Distribution Operating Expenses	Allocation Factor
(1)	(2)	(3)
Residential	\$ 2,751,113	0.7192
Non-Residential	741,259	0.1938
Rate J	90,817	0.0237
Sales for Resale	19,826	0.0052
Private Fire	98,116	0.0257
Public Fire	123,971	0.0324
Total	<u>3,825,102</u>	<u>1.0000</u>

FACTOR 11. ALLOCATION OF TRANSMISSION AND DISTRIBUTION MAINTENANCE SUPERVISION AND ENGINEERING, STRUCTURES AND IMPROVEMENTS, AND OTHER EXPENSES.

Factors are based on transmission and distribution maintenance expenses other than those being allocated, as follows:

Customer Classification	Transmission & Distribution Maintenance Expenses	Allocation Factor
(1)	(2)	(3)
Residential	\$ 2,402,134	0.5953
Non-Residential	782,468	0.1939
Rate J	108,187	0.0268
Sales for Resale	25,384	0.0063
Private Fire	100,461	0.0249
Public Fire	616,660	0.1528
Total	<u>\$4,035,294</u>	<u>1.0000</u>

MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 12. ALLOCATION OF BILLING AND COLLECTING COSTS.

Factors are based on the total number of customers

Customer Classification	Total Customers	Allocation Factor
(1)	(2)	(3)
Residential	404,643	0.9254
Non-Residential	26,100	0.0597
Rate J	305	0.0007
Sales for Resale	42	0.0001
Private Fire	6,145	0.0141
Public Fire	0	0.0000
	<u>0</u>	<u>0.0000</u>
 Total	 <u>437,235</u>	 <u>1.0000</u>

FACTOR 13. ALLOCATION OF METER READING COSTS.

Factors are based on the number of metered bills.

Customer Classification	Total Metered Customers	Allocation Factor
(1)	(2)	(3)
Residential	404,643	0.9387
Non-Residential	26,100	0.0605
Rate J	305	0.0007
Sales for Resale	42	0.0001
Private Fire	0	0.0000
	<u>0</u>	<u>0.0000</u>
	<u>431,090</u>	<u>1.0000</u>



**MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS**

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 14. ALLOCATION OF ADMINISTRATIVE AND GENERAL EXPENSES

Factors are based on the allocation of all other operation and maintenance expenses excluding purchased water, power, chemicals and waste disposal.

Customer Classification	Operation & Maintenance Expenses	Allocation Factor
(1)	(2)	(3)
Residential	\$25,916,340	0.7068
Non-Residential	6,126,029	0.1671
Rate J	1,377,366	0.0376
Sales for Resale	564,137	0.0154
Rate F - Private Fire	565,428	0.0154
Public Fire	2,114,647	0.0577
Total	<u>\$36,663,947</u>	<u>1.0000</u>

FACTOR 15. ALLOCATION OF CASH WORKING CAPITAL

Factors are based on the allocation operation and maintenance expenses including purchased water, power, chemicals and waste disposal.

Customer Classification	Operation & Maintenance Expenses	Allocation Factor
(1)	(2)	(3)
Residential	\$90,024,953	0.6943
Non-Residential	22,403,998	0.1728
Rate J	6,861,295	0.0529
Sales for Resale	2,834,473	0.0219
Rate F - Private Fire	1,666,126	0.0128
Public Fire	5,874,669	0.0453
Total	<u>\$129,665,513</u>	<u>1.0000</u>

MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 16. ALLOCATION OF LABOR RELATED TAXES AND BENEFITS.

Factors are based on the allocation of direct labor expense.

Customer Classification	Direct Labor Expense	Allocation Factor
(1)	(2)	(3)
Residential	\$21,312,378	0.7004
Non-Residential	5,222,576	0.1716
Rate J	1,316,210	0.0433
Sales for Resale	569,847	0.0187
Private Fire	439,829	0.0145
Public Fire	1,567,133	0.0515
Total	<u>\$30,427,972</u>	<u>1.0000</u>

FACTOR 17. ALLOCATION OF ORGANIZATION, FRANCHISES AND CONSENTS,  
MISCELLANEOUS INTANGIBLE PLANT AND OTHER Rate Base ELEMENTS.

Factors are based on the allocation of the original cost less depreciation other than those items being allocated, as follows:

Customer Classification	Original Cost Less Depreciation	Allocation Factor
(1)	(2)	(3)
Residential	\$1,058,942,724	0.6393
Non-Residential	345,264,002	0.2084
Rate J	81,378,297	0.0491
Sales for Resale	31,858,079	0.0192
Private Fire	21,597,964	0.0130
Public Fire	117,667,270	0.0710
Total	<u>\$1,656,708,336</u>	<u>1.0000</u>

**MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS**

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 18. ALLOCATION OF INCOME TAXES AND INCOME AVAILABLE FOR RETURN.

Factors are based on the allocation of the original cost measure of value Rate Base as shown on the following pages and summarized below.

Customer Classification	Original Cost Measure of Value	Allocation Factor
(1)	(2)	(3)
Residential	\$840,708,100	0.6394
Non-Residential	273,748,636	0.2082
Rate J	64,527,490	0.0491
Sales for Resale	25,271,339	0.0192
Private Fire	17,171,625	0.0131
Public Fire	93,306,598	0.0710
Total	<u>\$1,314,733,788</u>	<u>1.0000</u>

FACTOR 19. ALLOCATION OF REGULATORY COMMISSION EXPENSES, ASSESSMENTS AND OTHER WATER REVENUES.

The factors are based on the allocation of the total cost of service, excluding those items being allocated.

Customer Classification	Total Cost of Service	Allocation Factor
(1)	(2)	(3)
Residential	\$122,976,729	0.6866
Non-Residential	31,724,377	0.1771
Rate J	9,179,555	0.0512
Sales for Resale	3,794,471	0.0212
Private Fire	2,327,565	0.0130
Public Fire	9,119,930	0.0509
Total	<u>\$179,122,627</u>	<u>1.0000</u>

MISSOURI-AMERICAN WATER COMPANY  
ALL WATER DISTRICTS  
COST OF SERVICE FOR THE TWELVE MONTHS ENDED MAY 31, 2019 ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)	Residential (4)	Non Residential (5)	Rate J (6)	Sales for Resale (7)	Fire Protection	
							Private (8)	Public (9)
Rate Base								
Organization	17	\$ 239,653	\$ 153,217	\$ 49,946	\$ 11,767	\$ 4,602	\$ 3,116	\$ 17,016
Franchises	17	43,698	27,936	9,107	2,146	839	568	3,103
Land & Ld Rights SS	2	1,760,282	1,130,629	383,918	159,834	79,741	1,408	4,753
Land & Ld Rights P	3	453,517	278,732	94,649	39,365	19,637	4,989	16,145
Land & Ld Rights WT	2	2,630,453	1,689,540	573,702	238,845	119,160	2,104	7,102
Land & Ld Rights TD	6	5,080,433	3,240,300	1,227,941	184,420	44,200	89,924	293,649
Land & Land Rights AG	14	566,433	400,355	94,651	21,298	6,723	6,723	32,683
Struct & Imp SS	2	12,910,021	8,292,107	2,815,676	1,172,230	584,824	10,328	34,857
Struct & Imp P	3	12,784,716	7,857,486	2,668,170	1,109,713	553,578	140,632	455,136
Struct & Imp WT	2	87,626,646	56,282,595	19,111,372	7,956,499	3,969,487	70,101	236,592
Struct & Imp TD	6	4,618,935	2,945,957	1,116,397	167,667	40,185	81,755	266,974
Struct & Imp AG	14		0	0	0	0	0	0
Struct & Imp Offices	14	6,440,786	4,552,347	1,076,255	242,174	99,188	99,188	371,633
Gen Structures HVAC	14	160,260	113,272	26,779	6,026	2,468	2,468	9,247
Struct & Imp Leasehold	14	(158,020)	(111,689)	(26,405)	(5,942)	(2,434)	(2,434)	(9,118)
Struct & Imp Store,Shop,Gar	14	12,076,745	8,535,843	2,018,024	454,085	185,982	185,982	696,628
Struct & Imp Misc	14	1,720,322	1,215,924	287,466	64,684	26,493	26,493	99,263
Collect & Impounding	1	20,539	11,923	4,634	2,715	1,123	33	111
Lake, River & Other Intakes	2	6,556,653	4,211,338	1,430,006	595,344	297,016	5,245	17,703
Wells & Springs	2	6,619,657	4,251,806	1,443,747	601,065	289,870	5,296	17,873
Infiltration Galleries & Tunnels	2	1,461	938	319	133	66	1	4
Supply Mains	2	13,469,999	8,651,780	2,937,807	1,223,076	610,191	10,776	36,369
Power Generation Equip	2	17,527,902	11,258,172	3,822,835	1,591,534	794,014	14,022	47,325
Boiler Plant Equipment P	3		0	0	0	0	0	0
Pump Equip Steam	3	7,520,934	4,622,366	1,569,619	652,817	325,656	82,730	267,745
Pump Equip Electric	3	45,157,983	27,754,096	9,424,471	3,919,713	1,955,341	496,738	1,607,624
Pump Equip Diesel	3	688,821	411,057	139,583	58,054	28,960	7,357	23,810
Pump Equip Hydraulic	3	540,886	332,429	112,883	46,949	23,420	5,950	19,256
Pump Equip Other	3	2,514,636	1,545,495	524,805	218,270	108,684	27,661	89,521
Pump Equip WT	2		0	0	0	0	0	0
Pump Equip TD	6		0	0	0	0	0	0
WT Equip	2	140,143,150	90,013,945	30,565,221	12,724,998	6,348,485	112,115	378,387
WT Equip Other	2	935,143	600,642	203,955	84,911	42,362	748	2,525
Dist Reservoirs & Standpipe	5	21,251,867	12,047,683	4,681,786	1,576,888	410,161	595,052	1,940,295
TD Mains Not Class'fied by	6	5,663,185	3,624,736	1,373,626	206,300	49,444	100,592	328,488
TD Mains less than 10-Inch	4	614,063,608	395,149,667	153,577,283	14,553,305	0	11,912,832	38,870,220
TD Mains 10-Inch and Greater	3	311,923,020	191,707,888	65,098,334	27,074,918	13,506,267	3,431,153	11,104,460
Fire Mains	7	420,360	0	0	0	0	0	420,360

MISSOURI-AMERICAN WATER COMPANY  
ALL WATER DISTRICTS  
COST OF SERVICE FOR THE TWELVE MONTHS ENDED MAY 31, 2019 ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)	Residential		Rate J (6)	Sales for Resale (7)	Fire Protection	
			(4)	Non Residential (5)			Private (8)	Public (9)
Services	9	27,712,248	21,590,613	3,245,104	105,307	13,856	2,757,369	0
Meters	8	127,764,766	108,331,745	18,065,938	1,264,871	102,212	0	0
Meter Installations	8	15,309,533	12,980,953	2,164,768	151,564	12,248	0	0
Hydrants	7	55,611,390	0	0	0	0	0	55,611,390
Other T&D Plant	6	24,480	15,613	5,917	889	213	433	1,415
Misc Intangible Plant Studies	17	2,130,952	1,362,317	444,090	104,630	40,914	27,702	151,298
Other P/E SS	2	934	600	204	85	42	1	3
Office Furniture & Equip	14	126,413	89,348	21,124	4,753	1,947	1,947	7,294
Comp & Periph Equip	14	5,561,350	3,930,762	929,302	209,107	85,645	85,645	320,890
Computer Software	14	15,668,139	11,781,040	2,785,246	626,722	256,689	256,689	961,752
Computer Hardware and Software	14	63,225	44,688	10,565	2,377	974	974	3,648
BST Intal Investment - CIS	12	10,262,529	9,496,944	612,673	7,184	1,026	144,702	0
BTS Intal Investment	14	20,371,886	14,398,849	3,404,142	765,983	313,727	313,727	1,175,458
Other Office Equipment	14	74,353	52,552	12,424	2,795	1,145	1,145	4,290
Trans Equip Lt Duty Trks	14	10,615,006	7,502,686	1,773,767	399,124	163,471	163,471	612,486
Trans Equip Hvy Duty Trks	14	10,799,162	7,632,848	1,804,540	406,048	166,307	166,307	623,112
Trans Equip Autos	14	(1,084,517)	(766,537)	(181,223)	(40,778)	(16,702)	(16,702)	(62,577)
Trans Equip Other	14	1,598,808	1,130,037	267,161	60,115	24,622	24,622	92,251
Stores Equipment	14	865,546	611,768	144,633	32,545	13,329	13,329	49,942
Tools, Shop, Garage Equip	14	4,858,046	3,433,667	811,780	182,663	74,814	74,814	280,309
Laboratory Equipment	2	685,250	440,136	149,453	62,221	31,042	548	1,850
Power Operated Equipment	14	(361,552)	(255,545)	(60,415)	(13,594)	(5,568)	(5,568)	(20,862)
Comm Equip Non-Telephone	14	3,252,810	2,289,086	543,545	122,306	50,093	50,093	187,687
Comm Equip Telephone	14	(26,468)	(18,708)	(4,423)	(995)	(408)	(408)	(1,527)
Misc Equipment	14	2,263,747	1,600,016	378,272	85,117	34,862	34,862	130,618
Other Tangible Property	17	328,001	209,691	68,355	16,105	6,298	4,264	23,288
<b>Total Utility Plant in Service</b>		<b>1,659,450,650</b>	<b>1,060,695,685</b>	<b>345,835,500</b>	<b>81,512,944</b>	<b>31,910,732</b>	<b>21,633,614</b>	<b>117,861,975</b>

MISSOURI-AMERICAN WATER COMPANY  
ALL WATER DISTRICTS  
COST OF SERVICE FOR THE TWELVE MONTHS ENDED MAY 31, 2019 ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)	Residential		Rate J (6)	Sales for Resale (7)	Fire Protection	
			(4)	Non Residential (5)			Private (8)	Public (9)
<b>Other Rate Base Items</b>								
<b>Add:</b>								
Cash Working Capital	15	(586,500)	(407,207)	(101,347)	(31,026)	(12,844)	(7,507)	(26,568)
Materials and Supplies	14	5,055,224	3,580,100	846,399	190,452	78,004	78,004	292,263
Prepayments	14	0	0	0	0	0	0	0
Pension / OPEB Tracker	16	9,428,607	6,603,796	1,617,949	408,259	176,315	136,715	485,573
Tank Painting Tracker	5	327,153	185,463	72,072	24,275	6,314	9,160	29,869
Regulatory Deferrals	19	342,861	235,408	60,721	17,554	7,269	4,457	17,452
<b>Less:</b>								
Accumulated Deferred ITC (3%)	17	(389)	(249)	(81)	(19)	(7)	(5)	(28)
Deferred Income Taxes	17	(351,297,750)	(224,584,652)	(73,210,451)	(17,248,720)	(6,744,917)	(4,566,871)	(24,942,140)
Pensions	16	(7,996,068)	(5,600,446)	(1,372,129)	(346,230)	(149,526)	(115,943)	(411,793)
<b>Total Other Rate Base Elements</b>		<b>(344,716,862)</b>	<b>(219,987,785)</b>	<b>(72,086,864)</b>	<b>(16,985,454)</b>	<b>(6,639,393)</b>	<b>(4,461,989)</b>	<b>(24,555,376)</b>
<b>Total Original Cost Measure of Value</b>		<b>\$ 1,314,733,788</b>	<b>\$ 840,708,100</b>	<b>\$ 273,748,636</b>	<b>\$ 64,527,490</b>	<b>\$ 25,271,339</b>	<b>\$ 17,171,625</b>	<b>\$ 93,306,598</b>

MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 20. REALLOCATION OF PUBLIC FIRE

Factors are based on the relative cost of meters by size and customer classification.

<u>Customer Classification</u> (1)	<u>5/8" Dollar Equivalents</u> (2)	<u>Allocation Factor</u> (3)
Residential	446,914	0.8486
Non-Residential	74,505	0.1415
Rate J	5,192	0.0099
Sales for Resale	0	0.0000
Private Fire	<u>0</u>	<u>0.0000</u>
Total	<u><u>526,611</u></u>	<u><u>1.0000</u></u>

MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS

SUMMARY OF AVERAGE DAILY SEND OUT AND MAXIMUM DAILY USAGE  
FOR THE YEARS 1999-2016

Year	Average Daily Send out (MGD)	Maximum Daily Use	
		MGD	Ratio to Average
(1)	(2)	(3)	(4)
1999	213.572	395.838	1.85
2000	204.770	333.278	1.63
2001	208.905	346.848	1.66
2002	213.175	389.341	1.83
2003	205.553	383.625	1.87
2004	209.006	324.891	1.55
2005	224.851	393.318	1.75
2006	222.755	384.467	1.73
2007	230.937	416.607	1.80
2008	196.586	330.180	1.68
2009	188.216	324.997	1.73
2010	195.540	320.392	1.64
2011	202.866	355.558	1.75
2012	215.858	433.486	2.01
2013	197.668	342.118	1.73
2014	192.741	311.685	1.62
2015	196.556	294.610	1.50
2016	199.571	329.298	1.65



MISSOURI-AMERICAN WATER COMPANY  
ALL DISTRICTS

BASIS FOR ALLOCATING DEMAND RELATED COSTS OF FIRE SERVICE  
TO PRIVATE AND PUBLIC FIRE PROTECTION CUSTOMER CLASSIFICATIONS

Description (1)	Restrictive Diameters Squared (2)	Quantity (3)	Relative Demand (4)=(2)x(3)	Allocation Factor (5)
<u>PRIVATE FIRE PROTECTION</u>				
<u>Fire Lines</u>				
2 -inch	4.00	227	908	
3 -inch	9.00	5	45	
4 -inch	16.00	897	14,352	
6 -inch	36.00	2,938	105,768	
8 -inch	64.00	1,711	109,504	
10 -inch	100.00	94	9,400	
12 -inch	144.00	98	14,112	
Private Hydrants	20.25	175	3,544	
Total Rate F		6,145	257,633	0.2345
<u>PUBLIC FIRE PROTECTION</u>				
<u>Hydrant</u>	<u>Nozzle Sizes</u>			
5 1/4 Valve	1- 2-1/2" & 1- 4 1/2"	26.50	3,498	92,697
4 1/2" Valve	1- 2-1/2" & 1- 4 1/2"	20.25	35,966	728,312
4 3/4" Valve	1- 2-1/2" & 1- 4 1/2"	22.56	137	3,091
4 1/2" Valve	1-2 1/2"	6.25	556	3,475
4 1/4" Valve	2- 2-1/2" & 1- 4.5"	18.06	745	13,457
Total Rate E		40,902	841,031	0.7655
Total Fire Protection		47,047	1,098,664	1.0000

MISSOURI AMERICAN WATER COMPANY

CALCULATION OF THE 5/8-INCH CUSTOMER COSTS PER MONTH  
INCLUDING THE UNRECOVERED PUBLIC FIRE COSTS

<u>Cost Function</u>	<u>Cost of Service</u>	<u>Number of Units</u>	<u>Unit Cost Per Month</u>
Meters	\$ 29,849,902	527,033 5/8 Equivalents	\$ 4.72
Services	10,961,400	500,021 3/4 Equivalents	1.83
Billing/Collecting	<u>35,018,553</u>	4,001,295 Bills	<u>8.75</u>
Subtotal	75,829,855		15.30
Unrecovered Public Fire	<u>21,363,701</u>	527,033 5/8 Equivalents	<u>3.38</u>
Total	<u>\$ 97,193,557</u>		<u>\$ 18.68</u>

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MISSOURI-AMERICAN WATER COMPANY

St. Louis, Missouri

WASTEWATER OPERATIONS

COMPARISON OF COST OF SERVICE WITH REVENUES  
UNDER PRESENT AND PROPOSED RATES  
FOR THE TEST YEAR ENDED MAY 31, 2019

GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC

Harrisburg, Pennsylvania

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Comparison of Cost of Service with Revenues under Present  
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MISSOURI-AMERICAN WATER COMPANY  
ALL WASTEWATER DISTRICTS

COMPARISON OF COST OF SERVICE WITH REVENUES UNDER PRESENT AND PROPOSED RATES  
FOR THE TEST YEAR ENDED MAY 31, 2019

Customer Classification (1)	Cost of Service		Revenues, Present Rates		Revenues, Proposed Rates		Proposed Increase	
	Amount (2)	Percent (3)	Amount (4)	Percent (5)	Amount (6)	Percent (7)	Amount (8)	Percent Increase (9)
All Classes	\$ 9,800,164	100.0%	\$ 9,522,204	100.0%	\$ 9,800,028	100.0%	\$ 277,824	2.9%
<b>Total Sales</b>	<b>9,800,164</b>	<b>100.0%</b>	<b>9,522,204</b>	<b>100.0%</b>	<b>9,800,028</b>	<b>100.0%</b>	<b>277,824</b>	<b>2.9%</b>
Other Revenues	16,164		\$ 1,193		16,164		14,971	
Subtotal	\$ 9,816,328		\$ 9,523,397		\$ 9,816,192		\$ 292,795	
Hickory Hills Water Transfer	79,472		-		79,472		79,472	
<b>Total</b>	<b>\$ 9,895,800</b>		<b>\$ 9,523,397</b>		<b>\$ 9,895,664</b>		<b>\$ 372,267</b>	<b>3.9%</b>

MISSOURI-AMERICAN WATER COMPANY  
ARNOLD WASTEWATER

COMPARISON OF COST OF SERVICE WITH REVENUES UNDER PRESENT AND PROPOSED RATES  
FOR THE TEST YEAR ENDED MAY 31, 2019

Customer Classification (1)	Cost of Service		Revenues, Present Rates		Revenues, Proposed Rates		Proposed Increase	
	Amount (2)	Percent (3)	Amount (4)	Percent (5)	Amount (6)	Percent (7)	Amount (8)	Percent Increase (9)
All Classes	\$ 4,737,361	100.0%	\$ 4,883,584	100.0%	\$ 5,088,179	100.0%	\$ 204,595	4.2%
Total Sales	4,737,361	<u>100.0%</u>	4,883,584	<u>100.0%</u>	5,088,179	<u>100.0%</u>	204,595	4.2%
Water Subsidy Other Revenues	<u>6,779</u>		<u>1,019</u>		<u>6,779</u>		<u>5,760</u>	565.2%
Total	<u>\$ 4,744,140</u>		<u>\$ 4,884,603</u>		<u>\$ 5,094,958</u>		<u>\$ 210,355</u>	4.3%

MISSOURI-AMERICAN WATER COMPANY  
OTHER WASTEWATER DISTRICTS EXCLUDING ARNOLD

COMPARISON OF COST OF SERVICE WITH REVENUES UNDER PRESENT AND PROPOSED RATES  
FOR THE TEST YEAR ENDED MAY 31, 2019

Customer Classification (1)	Cost of Service		Revenues, Present Rates		Revenues, Proposed Rates		Proposed Increase	
	Amount (2)	Percent (3)	Amount (4)	Percent (5)	Amount (6)	Percent (7)	Amount (8)	Percent Increase (9)
All Classes	\$ 5,062,857	100.0%	\$ 4,638,620	100.0%	\$ 4,711,849	100.0%	\$ 73,229	1.6%
<b>Total Sales</b>	<b>5,062,857</b>	<b>100.0%</b>	<b>4,638,620</b>	<b>100.0%</b>	<b>4,711,849</b>	<b>100.0%</b>	<b>73,229</b>	<b>1.6%</b>
Other Revenues	9,331		174		9,385		9,211	
Subtotal	\$ 5,072,188		\$ 4,638,794		\$ 4,721,234		\$ 82,440	
Water Transfer	79,472				79,472		79,472	
<b>Total</b>	<b>\$ 5,151,660</b>		<b>\$ 4,638,794</b>		<b>\$ 4,800,706</b>		<b>\$ 161,912</b>	<b>3.5%</b>