Exhibit No.:	
Issues:	Cost of Service, Rate Design
Witness:	Jessica A. York
Type of Exhibit:	Direct Testimony
Sponsoring Party:	MIEC
Case Nos.:	WR-2017-0285
Date Testimony Prepared:	December 13, 2017

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Missouri-American Water Company for Authority to File Tariffs Reflecting Increased Rates for Water and Sewer Service	)))))	**Case No. WR-2017-0285**

Direct Testimony and Schedules of

Jessica A. York

On behalf of

Missouri Industrial Energy Consumers

December 13, 2017

BRUBAKER & ASSOCIATES, INC.

Project 10440

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Missouri-American Water Company for Authority to File Tariffs Reflecting Increased Rates for Water and Sewer Service	))))	**Case No. WR-2017-0285**

STATE OF MISSOURI)
) **SS**
COUNTY OF ST. LOUIS)

Affidavit of Jessica A. York

Jessica A. York, being first duly sworn, on her oath states:

1. My name is Jessica A. York. I am a consultant with Brubaker & Associates, Inc., having its principal place of business at 16690 Swingley Ridge Road, Suite 140, Chesterfield, Missouri 63017. We have been retained by the Missouri Industrial Energy Consumers in this proceeding on its behalf.

2. Attached hereto and made a part hereof for all purposes are my direct testimony and schedules which were prepared in written form for introduction into evidence in Missouri Public Service Commission Case No. WR-2017-0285.

3. I hereby swear and affirm that the testimony and schedules are true and correct and that they show the matters and things that they purport to show.

Jessica A. York

Subscribed and sworn to before me this 13th day of December, 2017.

MARIA E. DECKER
Notary Public - Notary Seal
STATE OF MISSOURI
St. Louis City
My Commission Expires: May 5, 2021
Commission # 13706793

Notary Public

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Direct Testimony of Jessica A. York

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A Jessica A. York. My business address is 16690 Swingley Ridge Road, Suite 140, Chesterfield, MO 63017.

Q WHAT IS YOUR OCCUPATION?

A I am a consultant in the field of public utility regulation with the firm Brubaker & Associates, Inc. ("BAI"), energy, economic and regulatory consultants.

Q PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A This information is included in Appendix A to this testimony.

Q ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?

A This testimony is presented on behalf of the Missouri Industrial Energy Consumers ("MIEC"). Companies whose interests the MIEC represents purchase substantial amounts of water from Missouri-American Water Company ("MAWC" or "Company").

Q WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A The purpose of my testimony is to respond to certain aspects of the Company's class cost of service study. For the reasons described in my testimony, I recommend one adjustment be made to the Company's proposed class cost of service study.

My silence on any issues addressed by the Company in its testimony should not be taken as tacit approval or agreement with that issue.

Class Cost of Service Study

Q DID YOU REVIEW MAWC'S CLASS COST OF SERVICE STUDY SPONSORED BY MS. CONSTANCE E. HEPPENSTALL?

A Yes, I did. Her class cost of service study is based on the future test year ended May 31, 2019, and utilizes the widely accepted Base-Extra Capacity method for *functionalizing, classifying* and *allocating* costs to MAWC's various customer classes. Investment in water utility plant and operating costs are first *functionalized* according to the role they play in providing water service: water supply, pumping, treatment, transmission, distribution, metering and billing. Next, these costs are *classified* into cost categories that reflect the causation of these costs: Base, or average day rates of flow; Extra Capacity-Maximum Day and Extra Capacity-Maximum Hour rates of flow; and Customer-related costs, such as metering and billing.

Q DO YOU AGREE WITH MS. HEPPENSTALL'S STATEWIDE CLASS COST OF SERVICE STUDY?

A I generally agree with the classifications and cost allocations in MAWC's cost of service study prepared by Ms. Heppenstall. However, I recommend that a different

allocation factor be used for the Purchased Fuel/Power for Source of Supply and Purchased Fuel/Power for Pumping expense items in the cost of service study. Ms. Heppenstall has used Factor 1 for both of these expenses, which allocates costs based on each class's annual water volume. The use of Factor 1 fails to recognize that purchased power expenses are related to both the Base and Extra Capacity cost components. This means these costs will not be accurately allocated to the customers who created the demands that caused the costs to be incurred.

Instead, it would be more appropriate to allocate purchased power costs associated with Source of Supply using Factor 2, and the purchased power costs associated with Power and Pumping ("Pumping") using Factor 3. Factor 2 recognizes each customer class's average load as well as its peaking requirements. Factor 3 recognizes each customer class's average load, peaking requirements, and a component for fire protection. Fire protection costs are costs associated with providing facilities to meet the potential peak demand of fire protection service.

Q HOW ARE BASE AND EXTRA CAPACITY COSTS DESCRIBED BY THE AMERICAN WATER WORKS ASSOCIATION ("AWWA")?

A The AWWA Manual M-1, *Principles of Water Rates, Fees and Charges*, *Sixth Edition*, provides some guidance on distinguishing between Base and Extra Capacity costs.

Base costs are described on page 62 as follows:

> "Base costs are costs that tend to vary with the total quantity of water used plus those O&M expenses and capital costs associated with service to customers under average load conditions, without the elements of cost incurred to meet water-use variations and resulting peaks in demand."

Extra Capacity costs are also described on page 62 as follows:

> "Extra capacity costs are costs associated with meeting peak demand rate of use requirements in excess of average (base) use and include O&M expenses and capital costs for system capacity beyond that required for average rate of use."

Q DO PURCHASED POWER COSTS VARY WITH THE TOTAL QUANTITY OF WATER USED UNDER BOTH AVERAGE LOAD CONDITIONS AND PEAK LOAD CONDITIONS?

A Yes. Purchased power costs are incurred to pump water year-round. Pumped volumes, and the associated purchased power costs, fluctuate with variations in customer consumption throughout the year. This means that purchased power expenses are incurred to serve customers under both average load conditions (Base) and to meet peak demand rate of use requirements in excess of average load (Extra Capacity). Therefore, instead of being allocated strictly on the basis of average daily use (Factor 1), these costs should be allocated in part using each class's maximum day demand extra capacity allocator.

Q DO THE ELECTRIC RATES FOR PURCHASED POWER, WHICH ARE APPLICABLE TO MAWC, VARY THROUGHOUT THE YEAR?

A Yes. Seasonal variations in the rates charged to MAWC by the utilities from which it purchases power also contribute to monthly and seasonal variations in purchased power costs. In particular, purchased power expenses are notably higher during the summer months of June through September as a result of both the seasonally differentiated demand and energy rates billed to MAWC, as well as increases in certain customer classes' consumption as compared to non-summer months.

Q WHAT AMOUNT OF PURCHASED POWER EXPENSE IS INCLUDED IN MAWC'S COST OF SERVICE STUDY?

A As shown on Schedule B of Company witness Heppenstall's direct testimony, MAWC's cost of service study includes $6,551,747 of purchased power expenses associated with the Source of Supply function, and $4,884,898 of purchased power expenses associated with Pumping for the test year.

Q HOW ARE THESE COSTS INCURRED?

A These costs are billed to MAWC by several electric utilities throughout Missouri. However, the majority (between 95% and 97%)[1] of purchased power costs are associated with electricity provided by Ameren Missouri, The Empire District Electric Company, Kansas City Power and Light Company ("KCPL"), and KCP&L Greater Missouri Operations Company ("GMO")

Q DO THE ELECTRIC TARIFFS ASSOCIATED WITH THE FOUR UTILITIES IDENTIFIED ABOVE HAVE SEASONALLY DIFFERENTIATED RATES?

A Yes. Ameren Missouri's tariffs contain seasonally differentiated energy charges for all rate schedules, and seasonally differentiated demand charges for commercial and industrial customers with meters capable of measuring demand. Ameren Missouri's energy charges and demand charges are higher during the summer months of June through September than in the non-summer months.

Similarly, Empire District Electric Company's and KCPL's tariffs for commercial and industrial customers include demand and energy charges that are

[1] MAWC's response to Missouri Public Service Commission Staff's Data Request 0052, and MAWC's "Fuel & Power Workpaper.xlsx."

higher in the summer months of June through September than in the non-summer months.

Q HISTORICALLY, HAVE MAWC'S PURCHASED POWER COSTS RELATED TO BOTH SOURCE OF SUPPLY AND PUMPING BEEN HIGHER DURING THE SUMMER MONTHS THAN IN THE NON-SUMMER MONTHS?

A Yes. In response to data request MIEC 1-005, MAWC provided actual purchased power expenses by month from January 2012 through October 2017. These monthly costs are shown on Schedule JAY-1, in the graph labeled "Purchased Power Cost for Source of Supply and Pumping vs. Pumped Volume."

This graph clearly shows that purchased power expenses for Source of Supply and Pumping are higher during the summer months than in the non-summer months. This trend is driven by the seasonally differentiated demand and energy rates for electric service, in conjunction with a substantial increase in the volumes of water pumped by MAWC during the summer months.

Q DOES SCHEDULE JAY-1 ALSO ILLUSTRATE THE SEASONAL VARIATION IN THE VOLUMES OF WATER PUMPED BY MAWC?

A Yes. MAWC provided historical pumped water volumes by month in response to data request MIEC 1-007, and this information is included in the same graph as the historical purchased power expenses. As shown in that graph, the volumes of water pumped each month follow a pattern very similar to the monthly purchased power expenses for Source of Supply and Pumping. It is evident that there is a strong relationship between pumped volumes and purchased power expenses each year. It

is also very apparent that both pumped volumes and purchased power expenses increase significantly during the summer months.

Q DO WATER SALES TO MAWC'S CUSTOMERS ALSO INCREASE SIGNIFICANTLY DURING THE SUMMER MONTHS?

A Yes. MAWC provided historical monthly water sales by rate class for the period of January 2012 through September 2017 in response to data request MIEC 1-009. The second graph on Schedule JAY-1 shows the monthly water sales by rate class from January 2012 through September 2017. This graph also clearly shows that customers, particularly in the Residential class, significantly increase water consumption during the summer months.

Q WHAT CONCLUSIONS CAN BE DRAWN FROM SCHEDULE JAY-1?

A The graphs presented on Schedule JAY-1 show that water sales, pumped volumes and purchased power expenses for Source of Supply and Pumping are all closely related. Purchased power costs increase when MAWC pumps larger volumes of water due to higher levels of consumption by customers. Water usage typically increases during the summer months when MAWC pays higher demand and energy rates for purchased power.

Q DOES MAWC EXPERIENCE PEAK DEMAND IN EXCESS OF AVERAGE USE DURING THE SUMMER MONTHS?

A Yes. As noted by Company witness James M. Jenkins, customers generally use more water in the summer months than in non-summer months.[2] Company witness Gregory P. Roach explains that the increased consumption during the summer period is due to discretionary (non-base) outdoor water use.[3] Further, MAWC identifies non-discretionary (base) water usage by analyzing consumption during the months of December through April.[4] This information further supports my position that MAWC incurs a portion of purchased power costs, particularly during the summer season, to meet peak demand rate of use (non-base) requirements in excess of average (base) use. Thus, it is appropriate and accurate to classify a portion of purchased power costs as Extra Capacity, and to allocate it across rate classes based on maximum day demand.

On the contrary, Ms. Heppenstall's classification and allocation of purchased power expenses for the Source of Supply and Pumping functions using Factor 1 imply that these costs are not influenced by maximum day or peak hour rates of flow. This assumption is contradicted by the information provided by MAWC. Factor 1 also ignores the demand component for fire protection.

Q CAN YOU ILLUSTRATE THE MONTHLY VARIATION IN THE PURCHASED POWER EXPENSE FOR SOURCE OF SUPPLY AND PUMPING?

A Yes. I have taken the monthly purchased power expenses associated with Source of Supply and Pumping, and divided those costs by the monthly pumped volumes to

[2] Direct Testimony of James M. Jenkins at page 20, lines 20-21.
[3] Direct Testimony of Gregory P. Roach at page 8, lines 13-16, and page 9, lines 8-11.
[4] *Id.*

calculate the average cost of purchased power per thousand gallons of water pumped. The results are presented below in Table 1.

TABLE 1

Average Purchased Power Rate for Pumping and Source of Supply ($ per Thousand Gallons)

Month	2012	2013	2014	2015	2016	2017
January	$ 0.12	$ 0.13	$ 0.14	$ 0.11	$ 0.14	$ 0.15
February	0.12	0.14	0.14	0.16	0.16	0.14
March	0.12	0.13	0.14	0.14	0.12	0.13
April	0.10	0.13	0.13	0.13	0.13	0.14
May	0.11	0.12	0.13	0.13	0.12	0.12
June	0.14	0.17	0.17	0.17	0.16	0.16
July	0.21	0.20	0.19	0.22	0.19	0.20
August	0.16	0.16	0.15	0.17	0.15	0.20
September	0.16	0.19	0.22	0.19	0.20	0.18
October	0.11	0.11	0.12	0.12	0.12	0.11
November	0.10	0.15	0.13	0.13	0.12	
December	0.12	0.14	0.14	0.15	0.15	
Annual Average	$ 0.14	$ 0.15	$ 0.15	$ 0.15	$ 0.15	$ 0.16
Summer (Jun - Sep)	$ 0.17	$ 0.18	$ 0.18	$ 0.19	$ 0.18	$ 0.19
Non-Summer	$ 0.11	$ 0.13	$ 0.13	$ 0.13	$ 0.13	$ 0.13

Sources: MAWC's responses to data requests MIEC 1-005 and MIEC 1-007.

As shown in the table, the average rate for purchased power varies each month and is notably higher during the summer season. The monthly variation in rates is driven by changes in electric demand and energy consumption for Source of Supply and Pumping (which vary with customers' water consumption), as well as increased electric demand and energy rates applicable to MAWC during the summer period. As previously noted, the variations in pumped volumes, purchased power expenses and water usage by customer class are shown in the graphs on Schedule JAY-1.

Q HAS MAWC REFLECTED MONTHLY OR SEASONAL ELECTRIC PRICE DIFFERENTIALS IN ITS PURCHASED POWER COSTS FOR THE TEST YEAR?

A No. As shown below in Table 2, MAWC's allocation of purchased power expense for its water operations reflects an underlying assumption that the average rate for fuel and purchased power per unit of water pumped is flat from month to month. The average monthly allocation changes from $0.17 per thousand gallons to $0.18 per thousand gallons between December 2018 and January 2019, due to MAWC's assumed inflation factor, which was used to estimate costs for the future test year.

TABLE 2

Monthly Fuel and Purchased Power Costs for Water Operations Allocated by MAWC for the Test Year Ending May 31, 2019

Description	Pumped Volume (1,000 gallons)	Purchased Power Expense Allocated by MAWC	Average Rate ($/1,000 gallons)
June 2018	6,294,573	$ 1,097,073	$ 0.17
July	7,527,318	1,298,816	0.17
August	7,620,186	1,309,056	0.17
September	6,903,869	1,170,295	0.17
October	6,118,851	1,045,400	0.17
November	5,086,156	873,004	0.17
December	5,210,819	895,501	0.17
January 2019	5,499,863	964,079	0.18
February	4,833,326	850,265	0.18
March	5,262,757	930,375	0.18
April	5,100,005	901,069	0.18
May	6,076,743	1,075,648	0.18
Total	71,534,466	$ 12,410,579	$ 0.17

Source: MAWC's "Fuel & Power Workpaper.xlsx"

Q PLEASE SUMMARIZE THE CONCLUSIONS THAT CAN BE DRAWN FROM TABLE 1 AND TABLE 2.

A A comparison of Table 1 and Table 2 shows that MAWC's classification of purchased power expenses for Source of Supply and Pumping as Base costs, and its subsequent allocation across customer classes using Factor 1 are flawed. Specifically, the Company's methodology is not representative of the actual extent to which purchased power costs vary with the electric demands incurred in pumping, or the underlying electric demand and energy rate structures that apply to pumping. Therefore, Factor 1 does not accurately allocate purchased power costs to the customer classes that drive the electric demands for pumping, which in turn cause the Company to incur the purchased power costs.

Classifying a portion of purchased power costs for these two functions as Extra Capacity, and allocating them to the customer classes based on the maximum day demand allocator would more accurately assign the costs to the cost causers.

Q WHICH ALLOCATION FACTORS SHOULD BE USED FOR PURCHASED POWER IN MS. HEPPENSTALL'S COST STUDY?

A I recommend the use of Factor 2 for the allocation of purchased power costs associated with Source of Supply, and Factor 3 for the allocation of purchased power expenses associated with Pumping. Factor 2 is the same allocator used to allocate other Source of Supply expenses and the associated electric pumping equipment included in rate base. Factor 3 is the same allocation factor used to allocate other Pumping expenses and the rate base associated with electric pumping equipment. Factor 2 and Factor 3 are more appropriate allocators than Factor 1, because they reflect both average flow and maximum day demand requirements. Factor 3 also

includes a component to recognize the demand related to fire protection. Additionally, these factors better reflect the seasonal price differential of power, as well as the increased cost for peak periods that normally coincide with peak demands on the water utility system.

Q WHY DO YOU BELIEVE THAT FACTOR 2 AND FACTOR 3 MORE ACCURATELY ALLOCATE PURCHASED POWER COSTS FOR SOURCE OF SUPPLY AND PUMPING BETWEEN CUSTOMER CLASSES THAN DOES THE COMPANY'S FACTOR 1?

A Factor 2 and Factor 3 allocate costs based on customers' maximum day demands as well as average flow or volume. This is appropriate because the four utilities associated with 95% to 97% of the total purchased power costs have commercial and industrial rates that reflect seasonal variation in demand and energy charges. The demand and energy rates during the summer period, a period where water demand is highest (i.e., MAWC experiences peak demand in excess of average, or base, use), are significantly higher than rates in the non-summer period. As such, the Company's cost of purchased power is impacted by customers' peak monthly demands, seasonal demand, and energy purchased for base volume. Factor 1 is inappropriate because it allocates costs only on volume.

Q HAVE YOU PERFORMED ANY ANALYSES TO VERIFY THAT FACTOR 2 AND FACTOR 3 PROVIDE A MORE ACCURATE ALLOCATION OF PURCHASED POWER COSTS THAN FACTOR 1?

A Yes. I believe the most accurate method of assigning these costs to customer classes would be to multiply the actual average monthly purchased power rate for

Source of Supply and Pumping by each class's monthly consumption. This method would capture the monthly and seasonal variations in pumped volumes and purchased power costs, and it would better reflect the underlying electric demand and energy rate structures applicable to pumping.

As an example, I have multiplied the average monthly rate for purchased power for the calendar 2016 base period by the normalized monthly Rate J volumes from the cost of service study. This resulted in an allocated purchased power cost for Source of Supply and Pumping of $1,030,766 to the Rate J class, as shown on Schedule JAY-2. This allocation is 9.4% of the 2016 expense.

Q FOR THE RATE J CLASS, HOW DOES THIS RESULT COMPARE TO THE USE OF FACTOR 2 AND FACTOR 3 FOR PURCHASED POWER EXPENSES RELATED TO SOURCE OF SUPPLY AND PUMPING, RESPECTIVELY, IN MAWC'S COST OF SERVICE STUDY?

A Simply changing the allocation of purchased power expenses for Source of Supply from Factor 1 to Factor 2, and the allocation of purchased power costs for Pumping from Factor 1 to Factor 3 in MAWC's cost of service study results in an allocation of $1,018,908 to the Rate J class. This allocation is 8.9% of the purchased power expense for Source of Supply and Pumping expense for the test year ending May 31, 2019, a difference of 0.5% from the method used on Schedule JAY-2. Therefore, Factor 2 and Factor 3 are accurate and reasonable allocation factors to apply to purchased power expenses for Source of Supply and Pumping, as compared to the Company's allocation using Factor 1, which allocates 13.2% of the total expense to Rate J. Factor 2 and Factor 3 better reflect the underlying electric demand and

energy rate structures applicable to pumping, as well as the monthly and seasonal variations in pumped volumes and the associated purchased power costs.

Q DOES FACTOR 1 OVER-ALLOCATE PURCHASED POWER COSTS TO RATE J?

A Yes. Factor 1 allocates purchased power costs associated with Source of Supply and Pumping of $1,511,924 to the Rate J class. Using Factor 2 and Factor 3 to allocate purchased power costs for the Source of Supply and Pumping functions, respectively, results in Rate J purchased power costs of $1,018,908. Therefore, Factor 1 over-allocates purchased power costs to Rate J by $493,017, or 48% based on the Company's cost of service study. The net reduction of $476,111 for Rate J, shown on Schedule JAY-3, includes the impact of my revised purchased power cost allocation on MAWC's internally developed allocation factors.

Q WHAT IS THE RESULT OF YOUR PROPOSED MODIFICATION TO THE ALLOCATION OF FUEL AND PURCHASED POWER COSTS FOR PUMPING IN THE COMPANY'S CLASS COST OF SERVICE STUDY?

A The results of my modified statewide class cost of service study are shown on Schedule JAY-3. As shown on that schedule, with the adjustments described above, Residential customers would require an above system average increase to reach cost of service, using the Company's claimed revenue deficiency. Private Fire customers would require a rate decrease. All other customer classes would receive increases below the system average.

Q DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A Yes, it does.

Appendix A

Qualifications of Jessica A. York

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A Jessica York. My business address is 16690 Swingley Ridge Road, Suite 140, Chesterfield, MO 63017.

Q PLEASE STATE YOUR OCCUPATION.

A I am a consultant in the field of public utility regulation and an Associate Consultant with the firm of Brubaker & Associates, Inc. ("BAI"), energy, economic and regulatory consultants.

Q PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EMPLOYMENT EXPERIENCE.

A I graduated from Truman State University in 2008 where I received my Bachelor of Science Degree in Mathematics with minors in Statistics and Actuarial Science. I earned my Master of Business Administration Degree with a concentration in Finance from the University of Missouri-St. Louis in 2014.

I joined BAI in 2011 as an analyst. Then, in March 2015, I joined the consulting team of BAI.

I have worked in various electric, natural gas and water and wastewater regulatory proceedings addressing cost of capital, sales revenue forecasts, revenue requirement assessments, class cost of service studies, rate design, and various policy issues. I have also conducted competitive power and natural gas solicitations

on behalf of large electric and natural gas users, have assisted those large power and natural gas users in developing procurement plans and strategies, assisted in competitive contract negotiations, and power and natural gas contract supply administration. In the regulated arena, I have evaluated cost of service studies and rate designs proffered by other parties in cases for various utilities, including in Wisconsin, Illinois, Indiana, Kansas, and others. I have conducted bill audits, rate forecasts and tariff rate optimization studies.

I have also provided support to clients with facilities in deregulated markets, including drafting supply requests for proposals, evaluating supply bids, and auditing competitive supply bills. I have also prepared and presented to clients reports that monitor the electric market and recommend strategic hedging transactions.

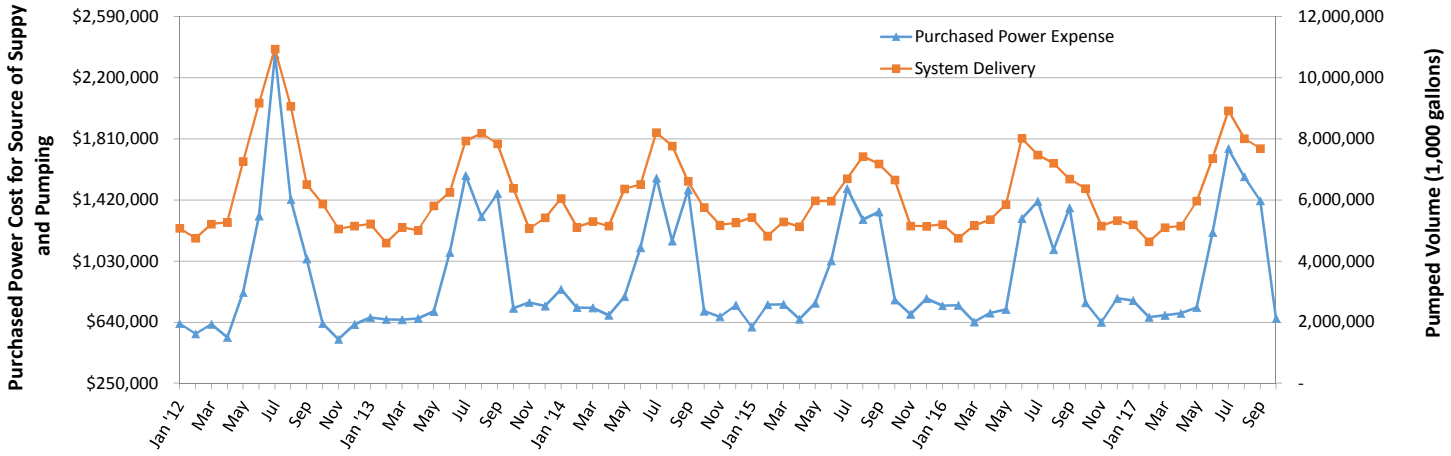
BAI was formed in April 1995. BAI and its predecessor firm have participated in more than 700 regulatory proceedings in forty states and Canada.

BAI provides consulting services in the economic, technical, accounting, and financial aspects of public utility rates and in the acquisition of utility and energy services through RFPs and negotiations, in both regulated and unregulated markets. Our clients include large industrial and institutional customers, some utilities and, on occasion, state regulatory agencies. We also prepare special studies and reports, forecasts, surveys and siting studies, and present seminars on utility-related issues.

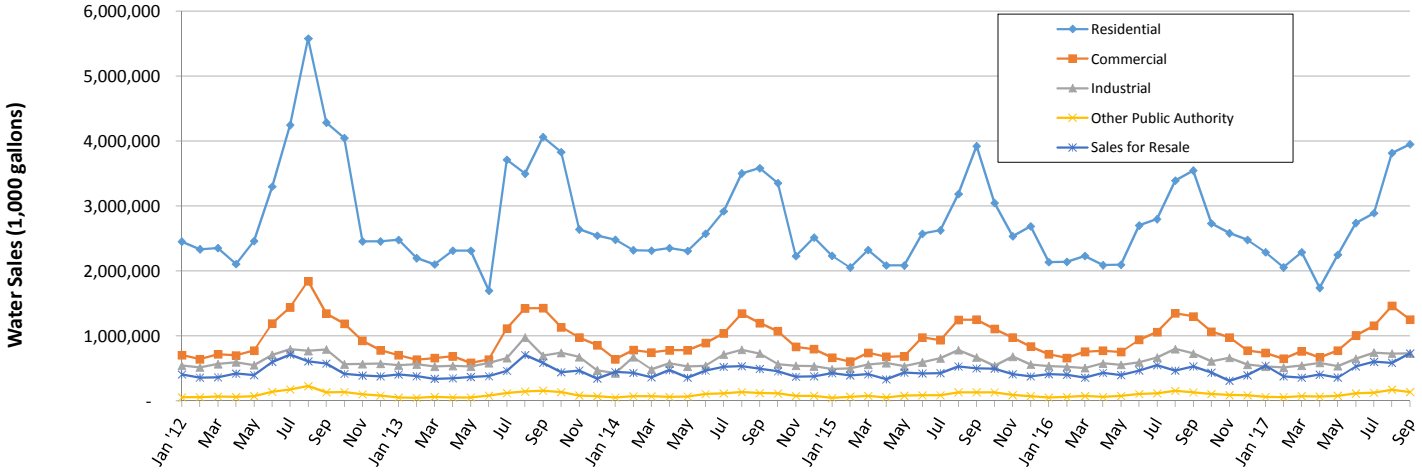
In general, we are engaged in energy and regulatory consulting, economic analysis and contract negotiation.

In addition to our main office in St. Louis, the firm also has branch offices in Phoenix, Arizona and Corpus Christi, Texas.

MISSOURI-AMERICAN WATER COMPANY



Sources: MAWC's responses to data requests MIEC 1-005 and MIEC 1-007.



Source: MAWC's response to data request MIEC 1-009.

MISSOURI-AMERICAN WATER COMPANY

Allocation of Purchased Power Expense to Rate J
Based on Actual Average Purchased Power Rates for Pumping

Line	Description	Pumped Volume (1,000 gallons)[1] (1)	Purchased Power Cost for Source of Supply & Pumping[2] (2)	Monthly Average Purchased Power Rate ($/1,000 gal.) (3)	Rate J Monthly Volumes (1,000 gal.)[3] (4)	Rate J Allocated Purchased Power Cost (5)
1	Jan 2016	5,203,322	$ 744,667	$ 0.14	456,857	$ 65,383
2	Feb	4,751,921	748,287	0.16	529,141	83,324
3	Mar	5,161,897	641,014	0.12	490,333	60,890
4	Apr	5,355,915	698,614	0.13	557,412	72,708
5	May	5,853,900	720,905	0.12	508,995	62,682
6	Jun	8,019,309	1,302,027	0.16	559,318	90,812
7	Jul	7,479,122	1,412,697	0.19	600,291	113,386
8	Aug	7,202,481	1,103,129	0.15	736,904	112,864
9	Sep	6,690,863	1,370,304	0.20	672,041	137,635
10	Oct	6,376,723	764,737	0.12	581,631	69,753
11	Nov	5,155,151	640,160	0.12	566,065	70,293
12	Dec	5,328,883	792,751	0.15	611,943	91,036
13	Total	72,579,489	$ 10,939,291		6,870,932	$ 1,030,766

Sources

[1] MAWC's response to data request MIEC 1-007.

[2] MAWC's response to data request MIEC 1-005.

[3] MAWC's workpaper, "2016 Rate J Normalization.xlsx."

MISSOURI-AMERICAN WATER COMPANY

Increase Required to Reach Cost of Service

Line	Customer Class	Present Revenues (1)	MAWC Increase / (Decrease) to Reach COS[1] Amount (2)	Percent (3)	MIEC Increase / (Decrease) to Reach COS[2] Amount (4)	Percent (5)	MIEC More (Less) than MAWC Amount (6)	Percent (7)
1	Residential	$ 177,161,196	$ 72,963,440	41.18%	$ 73,623,664	41.56%	$ 660,224	0.90%
2	Non-Residential	57,675,916	12,813,501	22.22%	12,703,665	22.03%	(109,836)	-0.86%
3	Rate J	15,173,474	2,591,946	17.08%	2,115,835	13.94%	(476,111)	-18.37%
4	Sales for Resale	6,865,390	196,944	2.87%	83,730	1.22%	(113,214)	-57.49%
5	Private Fire	$ 5,000,939	$ (435,243)	-8.70%	$ (395,727)	-7.91%	$ 39,517	-9.08%
6	Total Sales	$ 261,876,916	$ 88,130,588	33.65%	$ 88,131,168	33.65%	$ 580	0.00%
7	Other Revenues	$ 3,420,164	$ 733,943	21.46%	$ 733,943	21.46%	$ -	0.00%
8	Contract Revenues	5,022,927	247,187	4.92%	247,187	4.92%	-	0.00%
9	Total	$ 270,320,007	$ 89,111,719	32.97% [3]	$ 89,112,299	32.97% [3]	$ 580	0.00%

Sources and Notes

[1] Ms. Heppenstall's Exhibit CEH-1, Schedule A.

[2] Result of using Factor 2 and Factor 3 to allocate purchased power costs for Source of Supply, and Power and Pumping, respectively.

[3] Includes $79,471 Hickory Hill Sewer Transfer.