

No.:
Witness: Brian C. Collins
Type of Exhibit: Direct Testimony
Issues: Revenue Requirement
Sponsoring Party: Missouri Industrial Energy Consumers
Case No.: WR-2011-0337

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Missouri Public
Service Commission

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of
Missouri-American Water
Company's Request for Authority
to Implement a General Rate
Increase for Water and Sewer
Services Provided in Missouri
Service Areas

Case No. WR-2011-0337

Direct Testimony and Schedules of

Brian C. Collins

On behalf of

Missouri Industrial Energy Consumers

November 17, 2011

MIEC Exhibit No. 3
Date 2-21-12 Reporter JLC
File No. WR-2011-0337



BRUBAKER & ASSOCIATES, INC.
CHESTERFIELD, MO 63017

Project 9498

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

**In the Matter of
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Case No. WR-2011-0337

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


Affidavit of Brian C. Collins

Brian C. Collins, being first duly sworn, on his oath states:

1. My name is Brian C. Collins. 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 their behalf.

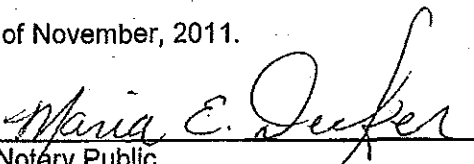
2. Attached hereto and made a part hereof for all purposes are my direct testimony and schedules which were prepared in written form for introduction into evidence in Missouri Public Service Commission Case No. WR-2011-0337.

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.

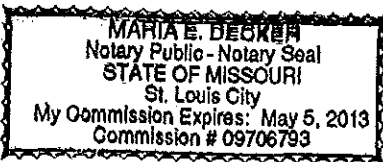


 Brian C. Collins

Subscribed and sworn to before me this 17th day of November, 2011.



 Notary Public



**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

_____))
In the Matter of)
Missouri-American Water)
Company's Request for Authority)
to Implement a General Rate)
Increase for Water and Sewer)
Services Provided in Missouri)
Service Areas)
_____)

Case No. WR-2011-0337

Direct Testimony of Brian C. Collins

1 Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

2 A Brian C. Collins. My business address is 16690 Swingley Ridge Road, Suite 140,
3 Chesterfield, MO 63017.

4 Q WHAT IS YOUR OCCUPATION?

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

7 Q PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

8 A This information is included in Appendix A to my testimony.

9 Q ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?

10 A This testimony is presented on behalf of the Missouri Industrial Energy Consumers
11 ("MIEC"). Member companies purchase substantial amounts of water from Missouri-
12 American Water Company ("Missouri-American" or "Company").

Brian C. Collins
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1 Q PLEASE SUMMARIZE THE ISSUES YOU WILL ADDRESS IN YOUR TESTIMONY.

2 A In this testimony, I will address the following issues concerning the Company's
3 proposed revenue requirement for the St. Louis Metro District (the St. Louis County
4 and St. Charles Districts):

- 5 1. Increase to chemical expense.
- 6 2. Increase to fuel and power expense.
- 7 3. Normalized sales and revenue for residential and commercial customers.
- 8 4. Water loss costs.

9 My silence on any aspect of the Company's proposals in this case should not be
10 taken as agreement or an endorsement of those proposals.

11 Q PLEASE SUMMARIZE YOUR FINDINGS CONCERNING THE COMPANY'S
12 CLAIMED REVENUE DEFICIENCY.

13 A The Company's claimed revenue deficiency for the St. Louis Metro District is
14 overstated by \$20.1 million. The adjustments necessary to the Company's claimed
15 revenue deficiency are outlined in Table 1 below.

| <u>Adjustment</u> | <u>Amount</u> <u>(\$000s)</u> |
|---------------------------------|----------------------------------|
| Chemical Expense | \$1,131 |
| Fuel and Power Expense | 570 |
| Residential Normalized Revenues | 5,447 |
| Commercial Normalized Revenues | 2,751 |
| Water Loss | 861 |
| Return on Equity | <u>9,348</u> |
| Total Adjustments | \$20,108 |

Brian C. Collins
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1 I will address each of these revenue requirement adjustments below. My
2 colleague, Mr. Michael Gorman, will address the adjustment concerning the
3 Company's return on equity. Mr. Gorman's adjustment is \$13.3 million on a total
4 Company basis (\$9.3 million for the St. Louis Metro District).

5 **Chemical Expense**

6 **Q HAS THE COMPANY PROPOSED TO INCREASE ITS TEST YEAR CHEMICAL**
7 **EXPENSE?**

8 **A** Yes. The Company proposes to increase actual test year chemical expense by
9 \$917,115 on a total Company basis. This is an increase of 8.97% to the actual test
10 year chemical expense of \$10,226,623 incurred by the Company. For the St. Louis
11 District, the Company proposes a test year chemical expense of \$8,944,871. (See
12 the Company workpaper, "Chemicals.xlsx" (summary tab)).

13 **Q HOW HAS THE COMPANY CALCULATED ITS PROPOSED INCREASE TO ITS**
14 **TEST YEAR CHEMICAL EXPENSE?**

15 **A** The Company has adjusted chemical quantities for the test year using a three-year
16 historical average. The Company has applied test year chemical prices to the three-
17 year historical average chemical quantities to forecast pro forma chemical expense.
18 The resulting projected pro forma chemical expense has been included in the
19 Company's revenue requirement.

Brian C. Collins
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1 Q IS THE COMPANY'S PROPOSAL TO USE HISTORICAL QUANTITIES
2 REASONABLE?

3 A No. Chemical expense relates to the amount of water production needed to meet test
4 year sales. Test year derived revenues at current rates are used to cover chemical
5 expense needed to produce the water to supply test year customer sales demands.
6 Under the Company's proposal, sales quantities necessary to drive test year chemical
7 expense would actually exceed the test year sales. Hence, the Company has
8 included chemical expense for water treatment and pumpage that is not included in
9 the development of the revenue at current rates in this proceeding. As such, the
10 Company's proposal for historical chemical quantities which are in excess of test year
11 quantities results in a mismatch between the sales quantities that produce revenue at
12 current rates, and the sales quantities which drive test year chemical expense.

13 Q WHAT IS YOUR RECOMMENDATION WITH RESPECT TO THE COMPANY'S
14 PROPOSAL TO INCREASE CHEMICAL EXPENSE?

15 A I recommend that actual test year chemical prices and quantities be used to calculate
16 the Company's pro forma chemical expense. As a result, I recommend a test year
17 chemical expense of \$7,813,817 for the St. Louis Metro District, as developed on
18 Schedule BCC-1. The Company has mismatched quantities for developing test year
19 sales revenue and volume which drive chemical expense. Therefore, the Company's
20 proposed use of a three-year historical average volume for expense and test year
21 volume for revenue is not justified nor accurate. I recommend matching the volume
22 used to develop test year expense and test year revenue. My recommendation
23 results in a reduction to the Company's claimed revenue deficiency of \$1,131,054 for
24 the St. Louis Metro District as developed on Schedule BCC-1.

Brian C. Collins
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1 **Fuel and power expense**

2 **Q HAS THE COMPANY PROPOSED TO INCREASE ITS TEST YEAR FUEL AND**
3 **POWER EXPENSE?**

4 **A** Yes. The Company proposes to increase actual test year fuel and power expense by
5 \$1,611,244 on a total Company basis. This is an increase of 16.3% to the actual test
6 year expense of \$9,907,147 incurred by the Company.

7 **Q HOW HAS THE COMPANY CALCULATED ITS PROPOSED INCREASE TO ITS**
8 **TEST YEAR FUEL AND POWER EXPENSE?**

9 **A** The Company has adjusted fuel and power expense based on estimated rate
10 increases the Company expects in its rates for electricity. It has taken these
11 projected rate increases and applied them to the quantities of electricity consumed in
12 the test year to forecast pro forma fuel and power expense.

13 **Q IS THE COMPANY'S PROJECTED FUEL AND POWER EXPENSE IN THE TEST**
14 **YEAR REASONABLE?**

15 **A** No. The Company's projected increase in electricity prices is overstated and does
16 not properly reflect the prices for the electric utilities in the St. Louis Metro District.
17 Therefore, the Company's proposed adjustment to its fuel and power expense should
18 be rejected.

19 **Q WHAT IS YOUR RECOMMENDATION WITH RESPECT TO THE COMPANY'S**
20 **PROPOSAL TO INCREASE FUEL AND POWER EXPENSE?**

21 **A** Again, the Company has overstated the fuel and power expense for the St. Louis
22 Metro District because it has assumed higher increases in electric utility rates than

Brian C. Collins
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1 that approved by this Commission. I propose to correct this expense by using the
2 approved changes to electric rates.

3 I have used an 11% increase in this expense for the period January-June and
4 an additional 6.7% (5.2% rate case and 1.5% FAC increase) increase for this
5 expense for the period January-December. My increases reflect the actual increases
6 in Ameren Missouri rates for 2010 and 2011. As a result, I recommend a test year
7 fuel and power expense of \$7,763,527 for the St. Louis Metro District. My
8 recommendation results in a reduction to the Company's claimed revenue deficiency
9 of \$570,362 for the St. Louis Metro District, as developed on Schedule BCC-2.

10 **Normalized Residential Revenues**

11 **Q HAS THE COMPANY PROPOSED TO NORMALIZE RESIDENTIAL REVENUES IN**
12 **THE ST. LOUIS METRO DISTRICT?**

13 **A** Yes. The Company proposes to normalize revenues for residential customers for the
14 St. Louis Metro District to account for declining water usage per customer.

15 **Q WHAT IS THE COMPANY'S PROPOSED ADJUSTMENT TO RESIDENTIAL**
16 **REVENUES?**

17 **A** The Company proposes to utilize a daily utilization of 232.19 gallons per residential
18 customer for the St. Louis County District (quarterly customers) and 236.35 gallons
19 per residential customer for the St. Charles District. These daily utilizations decrease
20 the sales volumes for the St. Louis Metro district and result in a decrease in revenues
21 at current rates of \$1,128,702.

1 Q HAS THE COMPANY UNDERSTATED RESIDENTIAL REVENUES AT CURRENT
2 RATES?

3 A Yes. The Company's proposed residential daily utilizations for the St. Louis County
4 and St. Charles Districts understate its revenues at current rates for the St. Louis
5 Metro District.

6 Q PLEASE EXPLAIN WHY YOU BELIEVE THE COMPANY UNDERSTATED
7 REVENUES AT CURRENT RATES.

8 A The Company prepared a baseline usage analysis that was used to predict
9 customers' daily utilization of water in the test year. A comparison of the test year
10 daily utilizations with the Company's actual daily utilizations over the period 2005-
11 2010 reveals that the test year daily utilization for the St. Louis Metro District in the
12 test year is low. As a result, revenue at current rates is understated because sales
13 are understated.

14 Q HOW CAN THE SALES REVENUE BE MORE ACCURATELY NORMALIZED?

15 A I recommend a six-year average (2005-2010) of the actual daily utilizations to
16 calculate normalized residential revenues for the test year. A review of the average
17 level of rainfall over this period demonstrates that the six-year average approximates
18 the 30-year normal level of rainfall. As a result, the six-year average of actual daily
19 utilizations approximates the daily utilization under normal weather.

20 In contrast, the Company's methodology produces a consumption level that is
21 less than this normalized level. My proposed daily utilizations are 246.45 gallons per
22 residential customer for the St. Louis County District and 257.58 gallons per
23 residential customer for the St. Charles District.

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1 Q WHAT IS THE EFFECT OF YOUR RECOMMENDATION WITH RESPECT TO THE
2 COMPANY'S NORMALIZED RESIDENTIAL REVENUES FOR THE TEST YEAR?

3 A As shown on Schedule BCC-3, my recommendation increases the Company's
4 proposed residential revenues by \$6,034,248 for the St. Louis Metro District. My
5 recommendation should also include an estimate of the additional fuel and power
6 expense and chemical expense associated with the increased sales volumes. My
7 recommendation reduces the Company's claimed revenue deficiency by \$5,447,156
8 after reflecting the impact of additional fuel and power expense and chemical
9 expense.

10 **Normalized Commercial Revenues**

11 Q HAS THE COMPANY PROPOSED TO NORMALIZE COMMERCIAL REVENUES IN
12 THE ST. LOUIS METRO DISTRICT?

13 A No. The Company does not normalize revenues for commercial customers for the St.
14 Louis Metro District. (See the Company's workpaper, "Cust Annual.xls").

15 Q WHAT IS THE COMPANY'S PROPOSED DAILY UTILIZATION RATE OF WATER
16 FOR COMMERCIAL CUSTOMERS?

17 A The Company proposes to utilize a daily utilization of 976.40 gallons per commercial
18 customer for St. Louis County (quarterly customers) and 1,092.94 gallons per
19 commercial customer for St. Charles.

1 Q HAS THE COMPANY UNDERSTATED ITS REVENUES AT CURRENT RATES
2 FOR COMMERCIAL CUSTOMERS FOR THE TEST YEAR?

3 A Yes. The Company's proposed commercial customer daily utilizations for St. Louis
4 County and St. Charles are understated. As a result, the Company has understated
5 its revenues at current rates for the St. Louis Metro District.

6 Q PLEASE EXPLAIN WHY YOU BELIEVE THE COMPANY UNDERSTATED
7 NORMALIZED REVENUES AT CURRENT RATES.

8 A A comparison of the Company's proposed daily utilizations with the Company's actual
9 daily utilizations over the period 2001-2007 reveals that its proposed test year daily
10 utilization for the St. Louis Metro District is low. I recommend a six-year average
11 (2001-2007) of the actual daily utilizations to calculate normalized commercial
12 revenues for the test year. My proposed daily utilizations are 1,126.21 gallons per
13 commercial customer for St. Louis County and 1,264.74 gallons per commercial
14 customer for St. Charles. I propose to review the most current usage data through
15 2010 and determine if an adjustment is required to my current position.

16 Q WHAT IS THE EFFECT OF YOUR RECOMMENDATION WITH RESPECT TO THE
17 COMPANY'S COMMERCIAL REVENUES FOR THE TEST YEAR?

18 A As shown on Schedule BCC-3, my recommendation increases the Company's
19 proposed commercial revenues by \$3,047,873 for the St. Louis Metro District. My
20 recommendation should also include an estimate of the additional fuel and power
21 expense and chemical expense associated with the increased volumes. My
22 recommendation reduces the Company's claimed revenue deficiency by \$2,751,390

1 after reflecting the impact of additional fuel and power expense and chemical
2 expense.

3 **Water Loss Adjustment**

4 Q WHAT AMOUNT OF WATER LOSS IS INCLUDED IN THE COMPANY'S COST OF
5 SERVICE FOR ST. LOUIS COUNTY?

6 A Approximately 19.9% of water loss is included in the Company's cost of service for
7 the St. Louis County District. This amount of water loss is excessive. I believe a
8 reasonable amount of water loss is 15%.

9 Q DOES THE INCLUSION OF AN EXCESSIVE WATER LOSS FACTOR IN THE
10 COMPANY'S COST OF SERVICE STUDY UNNECESSARILY INCREASE ITS
11 CLAIMED REVENUE DEFICIENCY IN THIS PROCEEDING?

12 A Yes. The Company's production cost includes the chemical and power costs
13 associated with its actual sales and losses of sales. Hence, if the Company has
14 excessive water losses, it is incurring the pumping and chemical costs associated
15 with treating the water which is subsequently lost in the distribution system. Hence,
16 adjusting the water loss factor down to a more reasonable level, will lower the
17 Company's cost of service by reducing pumping costs and chemical expense.

18 Q WHY DO YOU BELIEVE 19.9% IS EXCESSIVE AND 15% IS REASONABLE?

19 A I reviewed a document published by the American Water Works Association, "Survey
20 of State Agency Water Loss Reporting Practices".¹ Several states responded to the

¹*Survey of State Agency Water Loss Reporting Practices, Final Report to the American Water Works Association, Janice A. Beecher, Ph.D., January 2002.*

1 survey, which asked for standards for unaccounted for water. Most respondents
2 specified an unaccounted water factor of 10% to 15%.

3 **Q HOW DID YOU ESTIMATE THE REVENUE IMPACT OF REDUCING THE LOST**
4 **AND UNACCOUNTED FOR WATER TO 15% FROM THE COMPANY'S**
5 **PROPOSED 19.9%?**

6 **A** I estimated a modified amount of water volume in St. Louis County's test year cost of
7 service to reflect a 15% loss of water. I then estimated the amount of fuel and power
8 expense and chemical expense associated with this lower amount of water volume.
9 The amount of fuel and power expense and chemical expense on a volumetric basis
10 was estimated from the annualized levels of expense I have proposed. Using these
11 factors, I estimated the reduced amount of fuel and power expense and chemical
12 expense necessary to supply this reduced level of water. The adjustment then is the
13 amount of fuel and power expense and chemical expense at the Company's
14 proposed deliverable volumes reflecting its abnormally high loss factor, versus the
15 amount of fuel and power expense and chemical expense related to a lower volume
16 of water reflecting this reduced, water loss factor. As shown on Schedule BCC-4, this
17 adjustment lowers the Company's claimed revenue deficiency by \$860,767 (\$429,040
18 for fuel and power expense; \$431,727 for chemical expense).

19 **Q DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

20 **A** Yes, it does.

Appendix A

Qualifications of Brian C. Collins

1 Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

2 A Brian C. Collins. My business address is 16690 Swingley Ridge Road, Suite 140,
3 Chesterfield, MO 63017.

4 Q WHAT IS YOUR OCCUPATION AND BY WHOM ARE YOU EMPLOYED?

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

7 Q PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

8 A I graduated from Southern Illinois University Carbondale with a Bachelor of Science
9 degree in Electrical Engineering. I also graduated from the University of Illinois at
10 Springfield with a Master of Business Administration degree. Prior to joining BAI, I
11 was employed by the Illinois Commerce Commission and City Water Light & Power
12 ("CWLP") in Springfield, Illinois.

13 My responsibilities at the Illinois Commerce Commission included the review
14 of the prudence of utilities' fuel costs in fuel adjustment reconciliation cases before
15 the Commission as well as the review of utilities' requests for certificates of public
16 convenience and necessity for new electric transmission lines. My responsibilities at
17 CWLP included generation and transmission system planning. While at CWLP, I
18 completed several thermal and voltage studies in support of CWLP's operating and
19 planning decisions. I also performed duties for CWLP's Operations Department,
20 including calculating CWLP's monthly cost of production. I also determined CWLP's

1 allocation of wholesale purchased power costs to retail and wholesale customers for
2 use in the monthly fuel adjustment.

3 In June 2001, I joined BAI as a Consultant. Since that time, I have
4 participated in the analysis of various utility rate and other matters in several states
5 and before FERC. I have filed or presented testimony before the Florida Public
6 Service Commission, the Idaho Public Utilities Commission, the Illinois Commerce
7 Commission, the Indiana Utility Regulatory Commission, the Minnesota Public Utilities
8 Commission, the Missouri Public Service Commission, and the Public Service
9 Commission of Wisconsin. I have also assisted in the analysis of transmission line
10 routes proposed in certificate of convenience and necessity proceedings before the
11 Public Utility Commission of Texas.

12 In 2009, I completed the University of Wisconsin – Madison High Voltage
13 Direct Current (“HVDC”) Transmission Course for Planners that was sponsored by
14 the Midwest Independent Transmission System Operator, Inc. (“MISO”).

15 BAI was formed in April 1995. BAI and its predecessor firm has participated in
16 more than 700 regulatory proceeding in forty states and Canada.

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

23 In general, we are engaged in energy and regulatory consulting, economic
24 analysis and contract negotiation. In addition to our main office in St. Louis, the firm
25 also has branch offices in Phoenix, Arizona and Corpus Christi, Texas.

Missouri-American Water Company

Adjustment to Chemical Expense in St. Louis Metro District

| Line | District Name | Part # / Remark | Part Description | Test Year | | | | Pro Forma | | | MAWC | | |
|------|---------------------|-----------------|----------------------------------|------------|-----------|-----------------|---------------|-----------------|---------------|--------|-----------|-----------|-------------|
| | | | | Units | Expense | System Delivery | Units/Sys Del | System Delivery | Units/Sys Del | Price | Expense | Proposed | Adjustment |
| 1 | SL-St. Louis County | 170A-BULK | Ammonia - Aqua,19%-Bulk | 2,568,962 | 240,108 | 59,312,310 | 0.04331 | 58,914,543 | 0.04331 | 0.0866 | 220,980 | 212,213 | 8,767 |
| 2 | | 180C-100LB | Calcium Hypo,65%-100LB | 4,750 | 7,879 | 59,312,310 | 0.00008 | 58,914,543 | 0.00008 | 1.55 | 7,313 | 4,394 | 2,919 |
| 3 | | 200A-40LB | Carbon - PAC,Lignite-40LB | 78,355 | 60,228 | 59,312,310 | 0.00132 | 58,914,543 | 0.00132 | 0.795 | 61,874 | 61,874 | - |
| 4 | | 200A-40LB | Carbon - PAC,Lignite-40LB | 68,057 | 56,132 | 59,312,310 | 0.00115 | 58,914,543 | 0.00115 | 0.865 | 58,475 | 58,475 | - |
| 5 | | 200A-BULK | Carbon - PAC,Lignite-Bulk | 254,989 | 168,756 | 59,312,310 | 0.00430 | 58,914,543 | 0.00430 | 0.686 | 173,749 | 160,195 | 13,554 |
| 6 | | 200A-BULK | Carbon - PAC,Lignite-Bulk | 692,549 | 464,657 | 59,312,310 | 0.01168 | 58,914,543 | 0.01168 | 0.685 | 471,215 | 558,969 | (87,754) |
| 7 | | 220A-2000LB | Chlorine ,100%-2000LB | 1,730,342 | 383,245 | 59,312,310 | 0.02917 | 58,914,543 | 0.02917 | 0.231 | 397,028 | 426,528 | (29,500) |
| 8 | | 230A-50LB | Copper Sulfate,100%-50LB | 9,475 | 17,113 | 59,312,310 | 0.00016 | 58,914,543 | 0.00016 | 1.77 | 16,658 | 16,167 | 491 |
| 9 | | 250A-BULK | Femic Chloride,38%-Bulk | 5,163,198 | 504,805 | 59,312,310 | 0.08705 | 58,914,543 | 0.08705 | 0.08 | 410,286 | 410,286 | - |
| 10 | | 260A-BULK | Femic Sulfate - Dry,100%-Bulk | 3,125,116 | 849,016 | 59,312,310 | 0.05269 | 58,914,543 | 0.05269 | 0.24 | 744,998 | 1,268,234 | (523,236) |
| 11 | | 270A-BULK | Femic Sulfate - Liq,60%-Bulk | 4,810,952 | 410,397 | 59,312,310 | 0.08111 | 58,914,543 | 0.08111 | 0.0815 | 389,463 | 657,551 | (268,088) |
| 12 | | 300A-BULK | HFS Acid,23%-Bulk | 1,842,618 | 464,641 | 59,312,310 | 0.02769 | 58,914,543 | 0.02769 | 0.2815 | 459,296 | 470,981 | (11,685) |
| 13 | | 300A-BULK | HFS Acid,23%-Bulk | 540,983 | 153,306 | 59,312,310 | 0.00912 | 58,914,543 | 0.00912 | 0.28 | 150,459 | 153,199 | (2,740) |
| 14 | | 350G-BULK | Ortho-Poly P,Aqua Mag 9100 Bulk. | 124,980 | 70,681 | 59,312,310 | 0.00211 | 58,914,543 | 0.00211 | 0.51 | 63,302 | 63,302 | - |
| 15 | | 350G-BULK | Ortho-Poly P,Aqua Mag 9100 Bulk. | 108,814 | 54,702 | 59,312,310 | 0.00183 | 58,914,543 | 0.00183 | 0.51 | 55,123 | 55,123 | - |
| 16 | | 360A-BULK | Pebble Lime,100%-Bulk | 46,051,125 | 2,994,023 | 59,312,310 | 0.77642 | 58,914,543 | 0.77642 | 0.0648 | 2,964,100 | 2,946,316 | 17,784 |
| 17 | | 360A-BULK | Pebble Lime,100%-Bulk | 10,747,964 | 694,913 | 59,312,310 | 0.18121 | 58,914,543 | 0.18121 | 0.0642 | 685,392 | 900,309 | (214,917) |
| 18 | | 400C-50LB | Polymer,An,Superfic a110,A3333P | 696 | 1,244 | 59,312,310 | 0.00001 | 58,914,543 | 0.00001 | 2.15 | 1,486 | 1,544 | (58) |
| 19 | | 400W-50LB | Polymer,An,CedarFloc 566 | 92 | 206 | 59,312,310 | 0.00000 | 58,914,543 | 0.00000 | 2.15 | 196 | 196 | - |
| 20 | | 410V-BULK | Polymer,Cat,Neat(pDADMAC) | 827,565 | 290,689 | 59,312,310 | 0.01395 | 58,914,543 | 0.01395 | 0.36 | 295,925 | 356,317 | (60,392) |
| 21 | | 511A-BULK | Sodium Chloride,100% Pure-BULK | 2,555,536 | 194,721 | 59,312,310 | 0.04309 | 58,914,543 | 0.04309 | 0.072 | 182,765 | 158,964 | 23,801 |
| 22 | | 570A-MINI BULK | Sodium Hypo,13%- Mini Bulk | (7,652) | (1,672) | 59,312,310 | (0.00013) | 58,914,543 | (0.00013) | 0.195 | (1,482) | (1,482) | - |
| 23 | | 570A-MINI BULK | Sodium Hypo,13%- Mini Bulk | (3,900) | (852) | 59,312,310 | (0.00007) | 58,914,543 | (0.00007) | 0.195 | (755) | (755) | - |
| 24 | | 570A-MINI BULK | Sodium Hypo,13%- Mini Bulk | 13,358 | 2,857 | 59,312,310 | 0.00023 | 58,914,543 | 0.00023 | 0.195 | 2,587 | 2,587 | - |
| 25 | | 570A-MINI BULK | Sodium Hypo,13%- Mini Bulk | 17,470 | 3,835 | 59,312,310 | 0.00029 | 58,914,543 | 0.00029 | 0.195 | 3,384 | 3,384 | - |
| 26 | | | | 81,126,374 | 8,085,629 | | | | | | 7,813,817 | 8,944,871 | (1,131,054) |

Missouri-American Water Company

Adjustment to Fuel and Power Expense in St. Louis Metro District

| <u>Line</u> | <u>Description</u> | <u>January</u> | <u>February</u> | <u>March</u> | <u>April</u> | <u>May</u> | <u>June</u> | <u>July</u> | <u>August</u> | <u>September</u> | <u>October</u> | <u>November</u> | <u>December</u> | <u>Total</u> |
|-------------|--|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|-----------------|-----------------|------------------|
| 1 | St Charles | 2,843 | 2,962 | 3,423 | 2,612 | 1,511 | 3,889 | 3,643 | 3,409 | 4,122 | 2,852 | 2,516 | 3,029 | 36,811 |
| 2 | St. Louis County | <u>376,895</u> | <u>313,149</u> | <u>457,569</u> | <u>389,053</u> | <u>380,692</u> | <u>380,125</u> | <u>936,178</u> | <u>963,115</u> | <u>1,004,211</u> | <u>787,224</u> | <u>480,905</u> | <u>515,486</u> | <u>6,984,603</u> |
| 3 | Total | 379,738 | 316,111 | 460,992 | 391,665 | 382,203 | 384,014 | 939,820 | 966,524 | 1,008,333 | 790,076 | 483,421 | 518,515 | 7,021,413 |
| 4 | Increase in Rates | 11% | 11% | 11% | 11% | 11% | 11% | 0% | 0% | 0% | 0% | 0% | 0% | |
| 5 | Increased Rates | 421,509 | 350,883 | 511,701 | 434,748 | 424,246 | 426,256 | 939,820 | 966,524 | 1,008,333 | 790,076 | 483,421 | 518,515 | 7,276,033 |
| 6 | Increase in Rates to Annualize Expense | 6.7% | 6.7% | 6.7% | 6.7% | 6.7% | 6.7% | 6.7% | 6.7% | 6.7% | 6.7% | 6.7% | 6.7% | |
| 7 | Annualized Electric Expense | 449,750 | 374,392 | 545,985 | 463,876 | 452,670 | 454,815 | 1,002,788 | 1,031,281 | 1,075,891 | 843,011 | 515,810 | 553,256 | 7,763,527 |
| 8 | Proposed Electric Expense | <u>489,143</u> | <u>407,182</u> | <u>593,800</u> | <u>504,502</u> | <u>492,319</u> | <u>445,631</u> | <u>890,143</u> | <u>1,090,612</u> | <u>1,121,607</u> | <u>1,170,118</u> | <u>544,647</u> | <u>584,185</u> | <u>8,333,889</u> |
| 9 | Adjustment to Electric Expense | (39,393) | (32,790) | (47,815) | (40,626) | (39,649) | 9,184 | 112,645 | (59,331) | (45,716) | (327,107) | (28,837) | (30,929) | (570,362) |

Missouri-American Water Company
Normalized Revenue Adjustments for St. Louis Metro District

Residential

| Line | | Company Proposed ¹ \$ | MIEC Adjusted ² \$ | Adjustment \$ | Company Proposed ¹ CCF | MIEC Adjusted ² CCF | Adjustment CCF | Less Chemicals \$ | Less Fuel and Power \$ | Net Adjustment \$ |
|------|----------------|--|-------------------------------------|------------------|---|--------------------------------------|-------------------|-------------------------|------------------------------|-------------------------|
| | | (1) | (2) | (3) = (2) - (1) | (4) | (5) | (6) = (5) - (4) | (7) = (6) x \$0.10 | (8) = (6) x \$0.10 | (9) = (3) - (7) - (8) |
| 1 | St Charles | 41,737 | 750,079 | 708,342 | 16,457 | 313,308 | 296,850 | 34,647 | 34,431 | 639,264 |
| 2 | St Louis | (1,170,439) | 4,155,467 | 5,325,908 | (495,254) | 1,730,830 | 2,226,084 | 259,815 | 258,199 | 4,807,692 |
| 3 | St Louis Metro | (1,128,702) | 4,905,546 | 6,034,248 | (478,797) | 2,044,138 | 2,522,934 | 294,462 | 292,630 | 5,447,158 |

Commercial

| | | Company Proposed ¹ \$ | MIEC Adjusted ² \$ | Adjustment \$ | Company Proposed ¹ CCF | MIEC Adjusted ² CCF | Adjustment CCF | Less Chemicals \$ | Less Fuel and Power \$ | Net Adjustment \$ |
|---|----------------|--|-------------------------------------|------------------|---|--------------------------------------|-------------------|-------------------------|------------------------------|-------------------------|
| 4 | St Charles | (600) | 144,635 | 145,235 | (1) | 60,864 | 60,865 | 7,104 | 7,060 | 131,072 |
| 5 | St Louis | 0 | 2,902,638 | 2,902,638 | 0 | 1,213,224 | 1,213,224 | 141,600 | 140,719 | 2,620,318 |
| 6 | St Louis Metro | (600) | 3,047,273 | 3,047,873 | (1) | 1,274,088 | 1,274,089 | 148,704 | 147,779 | 2,751,390 |

| | | | | |
|----|---|-------------|--------|---------------------|
| 7 | St. Louis Metro Delivered Water (Chem.) | 78,762,758 | CCF | |
| 8 | St. Louis Metro Delivered Water (Power) | 79,294,532 | CCF | |
| | | \$ | \$/CCF | \$/Thousand Gallons |
| 9 | Chemical Expense ³ | 7,813,817.0 | 0.10 | 0.1328 |
| 10 | Fuel and Power Expense ³ | 7,817,620.0 | 0.10 | 0.1318 |

Sources:

- ¹ Company Workpaper, Cust Annual.xls
- ² Schedule BCC-3_Workpapers.xls
- ³ Schedules BCC-1 and BCC-2_Workpapers.xlsx

Missouri-American Water Company

Adjustment to Chemical Expense Based on Updated Loss Factor

| <u>Line</u> | <u>District</u> | <u>Total Water Produced¹</u> | <u>Total Delivered¹</u> | <u>Original Loss Factor</u> | <u>Adjusted Total Delivered</u> | <u>Adjusted Losses</u> | <u>Adjustment to Chemical Expense</u> |
|-------------|------------------|---|------------------------------------|-----------------------------|---------------------------------|------------------------|---------------------------------------|
| | | A | B | (A-B)/A | B/0.85 | A-(B/0.85) | (C/D)*(A-(B/0.85)) |
| 1 | St. Louis County | 56,205,390 | 45,007,722 | 19.92% | 52,950,261 | 3,255,129 | \$ 431,727 |

| <u>District</u> | <u>Chemical Expense²</u> | <u>System Delivery²</u> | <u>Unit Cost</u> |
|--------------------|-------------------------------------|------------------------------------|------------------|
| | C | D | C/D |
| 2 St. Louis County | \$ 7,813,817 | 58,914,543 | \$ 0.1326 |

Sources:

¹ MAWC's 2010 Annual Report to the MPSC

² Schedule BCC-1

Missouri-American Water Company

Adjustment to Fuel and Power Expense Based on Updated Loss Factor

| <u>Line</u> | <u>District</u> | <u>Total Water Produced¹</u> | <u>Total Delivered¹</u> | <u>Original Loss Factor</u> | <u>Adjusted Total Delivered</u> | <u>Adjusted Losses</u> | <u>Adjustment to Fuel Expense</u> |
|-------------|------------------|---|------------------------------------|-----------------------------|---------------------------------|------------------------|-----------------------------------|
| | | A | B | (A-B)/A | B/0.85 | A-(B/0.85) | (D/E)*(A-(B/0.85)) |
| 1 | St. Louis County | 56,205,390 | 45,007,722 | 19.92% | 52,950,261 | 3,255,129 | \$ 429,040 |

| <u>District</u> | <u>Fuel Expense²</u> | <u>Adjusted Fuel Expense³</u> | <u>System Delivery⁴</u> | <u>Unit Cost</u> |
|--------------------|---------------------------------|--|------------------------------------|------------------|
| | C | D | E | D/E |
| 2 St. Louis County | \$ 7,763,527 | \$ 7,817,620 | 59,312,310 | \$ 0.1318 |

Sources:

¹ MAWC's 2010 Annual Report to the MPSC

² Schedule BCC-2

³ MIEC's fuel and power adjustment plus pro forma expenses for St. Louis County and St. Charles from MAWC's Fuel_Power workpaper

⁴ MAWC's Fuel_Power workpaper