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MISSOURI PUBLIC SERVICE COMMISSION
UTILITY SERVICES DIVISION

REBUTTAL TESTIMONY

OF

DAVID MURRAY

MISSOURI-AMERICAN WATER COMPANY

CASE NO. WR-2007-0216

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TABLE OF CONTENTS
REBUTTAL TESTIMONY
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EXECUTIVE SUMMARY..... 2
COST OF COMMON EQUITY, CAPITAL STRUCTURE, EMBEDDED COST OF LONG-
TERM DEBT, EMBEDDED COST OF PREFERRED STOCK AND AVERAGE COST OF
SHORT-TERM DEBT..... 4
MS. AHERN'S AND MR. GORMAN'S RECOMMENDED CAPITAL STRUCTURE FOR
MAWC AND WEIGHTED AVERAGE COST OF CAPITAL ESTIMATES..... 5
MS. AHERN'S RECOMMENDED COST OF COMMON EQUITY FOR MAWC..... 18
MR. GORMAN'S RECOMMENDED COST OF COMMON EQUITY FOR MAWC 27
SUMMARY AND CONCLUSIONS 30

1 **EXECUTIVE SUMMARY**

2 Q. Please provide an executive summary of your rebuttal testimony.

3 A. Ms. Ahern and Mr. Gorman's proposed use of MAWC's capital structure for
4 ratemaking purposes in this case is inappropriate. It does not reflect the reality of how
5 MAWC is, and will be, financed. MAWC does not have a stand-alone credit rating, has
6 centralized most of its financing functions through its affiliate, American Water Capital
7 Corporation (AWCC), can receive equity infusions through debt raised at American Water,
8 and the debt provided by AWCC is supported by American Water's creditworthiness.
9 Because American Water is predominately a regulated water utility, it is appropriate to use the
10 parent company's capital structure in this case because it is consistent with the way in which
11 American Water believes its regulated water utility operations should be capitalized.

12 I will provide support for a lower cost of capital estimate for American Water's
13 regulated water utility operations from analyses done by third-parties which were hired by
14 American Water for purposes other than a rate case. These analyses provide support for a
15 ROR that is lower than MIEC witness Gorman's recommendation.

16 I will also address a few areas about each witnesses' specific cost of common equity
17 methodologies. Ms. Ahern suggests that a small size risk premium adjustment needs to be
18 made to her final results. I will provide support from a third party used by American Water
19 for valuation purposes that did not believe a small size adjustment should be made because of
20 the regulated nature of American Water's water operations.

21 Ms. Ahern discusses what she considers to be short-comings of the DCF model
22 because of current high market-to-book ratios as it relates to the ratemaking process which
23 applies the authorized return to book value rate base. I will discuss the strength of the DCF
24 model, which is that it captures investors' knowledge and expectations about the

1 fundamentals of an industry in general and a company in specific. Because investors know
2 that the authorized ROR is applied to rate base, the stock price will reflect this fact and no
3 further adjustment is needed.

4 Ms. Ahern and Mr. Gorman use projected yields to estimate the cost of common
5 equity using the risk premium method and CAPM. This is inappropriate for much the same
6 reason that using projected stock prices in the DCF would be inappropriate. The current
7 yields reflected in bond prices reflect investors' expectations of the future. I do not believe it
8 is appropriate to substitute projected interest rates for the interest rates currently required by
9 investors.

10 Ms. Ahern and Mr. Gorman use historical earned returns to develop their equity risk
11 premiums. While I also use historical earned returns to develop my equity risk premium for
12 my CAPM, I only used my CAPM as a test of reasonableness. I believe if one is using the
13 CAPM to help develop his/her recommended return, then one must recognize that these
14 historical returns may be overstated because of unexpected high earned returns for the period
15 1951 through 2000.

16 Ms. Ahern's and Mr. Gorman's use of arithmetic averages rather than geometric
17 averages to measure historical equity risk premiums causes higher estimated costs of common
18 equity for both their risk premium analysis and CAPM analysis. I will explain and provide
19 academic support as to why it is more appropriate to use geometric averages when evaluating
20 long-term asset classes, such as utility stocks.

21 I will also discuss Mr. Gorman's use of average authorized returns to develop his risk
22 premium estimate. While this approach may be intuitively appealing to the Commission
23 given its interest in other states' authorized returns, I do not believe it should be represented

1 as a cost of common equity model because there are many considerations that a Commission
2 may make when authorizing a return on common equity (ROE) and some of these may not be
3 cost-of-capital based.

4 **COST OF COMMON EQUITY, CAPITAL STRUCTURE, EMBEDDED COST OF**
5 **LONG-TERM DEBT, EMBEDDED COST OF PREFERRED STOCK AND**
6 **AVERAGE COST OF SHORT-TERM DEBT**

7 Q. Did you update your capital structure, embedded cost of debt and average cost
8 of short-term debt for the update period, December 31, 2006?

9 A. No. At the time of writing this rebuttal testimony, MAWC still has not been
10 able to provide American Water's financial statements as of December 31, 2006. Although
11 MAWC has provided embedded cost of long-term debt and preferred stock information as of
12 December 31, 2006, it is not appropriate to use these costs until they can be matched with
13 their corresponding balances as of December 31, 2006.

14 Q. Is there agreement between Staff, MAWC and MIEC on the embedded cost of
15 preferred stock, the embedded cost of long-term debt and the average cost of
16 short-term debt?

17 A. No. MAWC and MIEC used MAWC's capital structure, which consists of
18 allocated debt and parent company equity infusions, whereas I utilized American Water's
19 consolidated capital structure. Because I utilized a consolidated capital structure, I also
20 matched the corresponding consolidated embedded cost of long-term debt (based on debt
21 issued by American Water, American Water Capital Corporation and MAWC), embedded
22 cost of preferred stock (based on preferred stock issued by American Water and MAWC) and
23 average cost of short-term debt for the consolidated entity to this capital structure. MAWC
24 and MIEC's determinations of the embedded cost of long-term debt and embedded cost of

1 preferred stock are based on the costs of issuances associated with MAWC. Therefore, the
2 costs used by MAWC and MIEC do not match those calculated by Staff.

3 Q. Is there an agreement between Staff, MAWC and MIEC on capital structure
4 and cost of common equity for MAWC?

5 A. No. Mr. Gorman and Ms. Ahern used MAWC's capital structure rather than
6 American Water's capital structure.

7 Mr. Gorman recommends a cost of common equity of 9.70 percent whereas Staff
8 recommends a cost of common equity of 8.60 to 9.60 percent. Ms. Ahern recommends a cost
9 of common equity of 11.30 percent.

10 **MS. AHERN'S AND MR. GORMAN'S RECOMMENDED CAPITAL STRUCTURE**
11 **FOR MAWC AND WEIGHTED AVERAGE COST OF CAPITAL ESTIMATES**

12 Q. Please summarize Ms. Ahern's and Mr. Gorman's capital structure
13 recommendations for MAWC.

14 A. Ms. Ahern and Mr. Gorman recommend the use of MAWC's capital structure.
15 Ms. Ahern and Mr. Gorman use MAWC's estimated capital structure for the first year rates
16 will be in effect. This capital structure was estimated by Company witness James M. Jenkins
17 and is shown on Schedule JMJ-1 attached to his Direct Testimony. This capital structure
18 consists of 46.91 percent common equity, 0.42 percent preferred stock and 52.67 percent
19 long-term debt.

20 Q. Why is it inappropriate to use MAWC's capital structure for ratemaking
21 purposes in this case?

22 A. MAWC no longer issues all of its own debt. This change occurred when
23 American Water created its financing subsidiary American Water Capital

1 Corporation (AWCC). Although there are internal loan documents between MAWC and
2 AWCC, AWCC is the entity that is actually issuing the debt on a consolidated basis for all of
3 the subsidiaries of American Water. Additionally, AWCC is acting as the corporate treasury
4 for American Water, in that it also aggregates all of the cash receipts and disbursement
5 functions for its subsidiaries.

6 Q. Please describe MAWC's financing arrangement with AWCC.

7 A. As stated in Paragraph 13 of Missouri-American's Application filed in Case
8 No. WF-2002-1096:

9 Applicant [MAWC] proposes to implement some or all of the long-
10 term debt portion of its financing program primarily through an
11 affiliate, American Water Capital Corp. ("AWCC"). AWCC is a
12 wholly-owned subsidiary of American Water Works Company, Inc.,
13 ("AWW") established for the purpose of providing financial services to
14 AWW and its water and wastewater utility subsidiaries (including
15 Applicant) by pooling the financing requirements of such companies
16 (the "Participants"), thereby creating larger and more cost efficient debt
17 issues at more attractive interest rates and lower transaction costs than
18 would otherwise be available.

19 The Application goes on further to state in Paragraph 14:

20 In the past, Applicant, and its constituent predecessors in interest,
21 provided for debt financing needs primarily through short-term bank
22 borrowings and the sale by private placement of long-term bonds
23 issued pursuant to mortgages on plant and property in this State
24 including the Indenture of Mortgage and, when available, tax exempt
25 bond issues. Changes in financial markets and federal securities
26 regulation have made the public securities market an attractive
27 alternative to the traditional, secured privately placed bonds and bank
28 borrowings upon which Applicant has traditionally relied. However,
29 borrowers can derive the benefits of the public market only if the
30 amounts they borrow are large enough, and their credit rating high
31 enough, to meet that market's significant entry level requirements.
32 Standing alone, Applicant does not have the borrowing requirements
33 large enough to finance in the public markets. However, by financing
34 through AWCC, Applicant and its sister companies in other states have
35 sufficient borrowing power to finance in the public market and thereby
36 obtain the advantageous terms available therein.

Rebuttal Testimony of
David Murray

1 Paragraph 15. goes on further to state:

2 Generally, each year the Participants provide AWCC with an estimate
3 of the borrowing requirements which they propose to finance through
4 AWCC for the coming year and for one (1) to three (3) years in
5 advance. On the basis of this information, AWCC arranges borrowing
6 commitments and programs to provide the funds necessary to meet
7 these requirements. All long-term debt incurred by AWCC and the
8 corresponding long-term indebtedness of each Participant will be
9 match-funded. That is to say, AWCC borrows long term funds only to
10 meet specific borrowing needs of one or more participants.

11 Q. Do you have any evidence that indicates that the utilization of AWCC for the
12 debt financing of its subsidiaries is a consolidation of financing needs for American Water
13 and its subsidiaries?

14 A. Yes. In MAWC's last rate case, Case No. WR-2003-0500, Staff (Ronald L.
15 Bible and David Murray) conducted a transcribed telephone interview on September 10, 2003
16 with MAWC (James M. Jenkins and Edward Grubb) and American Water (Paul G. Foran and
17 Joseph Hartnett, Jr.) personnel. The following question and answer occurred between Ron
18 Bible and Joseph Hartnett, Jr. (p. 16, ll. 3-21) :

19 Mr. Bible:

20 Q. This is Ron Bible. Just to try to summarize in my mind, basically
21 the way I understand it, and you can tell me if I'm wrong, you
22 formed American Water Capital Corp. to basically -- your
23 operating entities were individually going to the capital markets at
24 least to issue debt in the past and you formed American Water
25 Capital Corporation to basically consolidate all of those, pull them
26 together and get maybe a better interest rate, better cost and stuff
27 like that. And going forward, that's how you intend to do your
28 public financings with the exception of going through, like, a state
29 program like the EI ERA is that basically correct?

30 Mr. Hartnett:

31 A. That's, correct, American Water Capital Corp. will continue to be
32 the source of capital, debt capital for its participants to regulate[d]
33 utilities and the parent.

Rebuttal Testimony of
David Murray

1 Q. How does Standard & Poor's (S&P) evaluate the creditworthiness of American
2 Water and its subsidiaries?

3 A. S&P does not provide credit ratings for American Water's individual
4 subsidiaries as it does for some other Missouri utilities, such as AmerenUE and Kansas City
5 Power and Light. The credit analysis performed by S&P is based on the consolidated credit
6 risk profile of American Water, which is primarily based on its regulated subsidiaries, but
7 does include some non-regulated operations. Consequently, the cost of capital provided to
8 MAWC is driven by the consolidated operations of American Water. As long as the risk
9 associated with the consolidated operations is consistent with MAWC's risk, then it is
10 appropriate to not only use the consolidated capital structure, but also the cost of capital
11 associated with this capital structure for ratemaking purposes.

12 Q. Does the consolidation of financing needs through AWCC make MAWC's
13 capital structure inappropriate for purposes of arriving at a recommended ROR?

14 A. Yes, because AWCC is more or less acting like the treasury for American
15 Water, the inflows and outflows of funds at AWCC become commingled with those funds
16 that are being used for all sorts of purposes at American Water and its subsidiaries. For
17 example, Staff discovered during its interview in MAWC's last rate case that of \$1.2 billion
18 of debt issued on November 6, 2001, American Water borrowed \$450 million for equity
19 infusions into certain subsidiaries (p. 36, ll. 8-15). If American Water's subsidiaries had truly
20 independent capital structures, then the debt incurred for this acquisition would have been
21 carried at the subsidiary level. By carrying some of this debt at the parent company level
22 rather than at the subsidiaries, American Water is able to produce subsidiary capital structures
23 that are more heavily weighted in equity, which would not be the case otherwise. Because

Rebuttal Testimony of
David Murray

1 American Water's capital structure directly affects the cost of capital that is available to its
2 subsidiaries, it is unlikely that American Water would manage this capital structure in an
3 imprudent manner, whether it is with too much leverage or not enough. Consequently, the
4 use of the consolidated capital structure for ratemaking purposes is most likely to produce a
5 ROR that is consistent with the cost of capital available to MAWC.

6 Q. Considering the fact that your proposed capital structure contains 28.18 percent
7 common equity versus MAWC witness Jim Jenkins' proposed capital structure, which
8 includes 46.91 percent common equity, do you still think it is appropriate to use American
9 Water's capital structure?

10 A. Yes, because this is a more accurate reflection of how American Water and its
11 subsidiaries are financed. If one were to use MAWC's capital structure, which contains
12 equity infusions from the parent company and debt allocations from AWCC, then the analyst
13 would be utilizing a capital structure that doesn't truly reflect how American Water's
14 subsidiaries are financed. If American Water believed that its capital structure was not
15 prudent because it wasn't consistent with how its subsidiaries were financed, then one would
16 believe that American Water would have been financed with more common equity.

17 Q. What is the primary reason for American Water's capital structure having less
18 common equity than MAWC?

19 A. Although I can't provide a complete explanation as to why American Water
20 has less common equity on a consolidated basis compared to MAWC because I am not sure
21 how much common equity is held at American Water's other subsidiaries, it appears that the
22 main reason for the difference is the \$1.75 billion of preferred stock issued by American
23 Water as part of the acquisition by RWE.

Rebuttal Testimony of
David Murray

1 Q. If you add the preferred stock ratio to the common equity ratio in your capital
2 structure recommendation, what is the total equity ratio in your capital structure
3 recommendation?

4 A. 47.36 percent (28.18 percent plus 19.18 percent).

5 Q. Isn't this similar to the common equity ratio proposed by MAWC in this case?

6 A. Yes.

7 Q. Is preferred stock given the same amount of equity treatment by credit rating
8 agencies as common equity?

9 A. No. According to S&P's Corporate Ratings Criteria, perpetual preferred stock
10 is typically assigned an equity value in the 40 to 60 percent range. If 50 percent equity
11 treatment is provided to American Water's preferred stock, then American Water's equity
12 ratio would be approximately 38 percent, which is fairly similar to American Water's average
13 year-ended common equity ratio of 37.36 percent for the period 1997 through 2002. This
14 average common equity ratio is based on the exclusion of short-term debt from the capital
15 structure. If I exclude short-term debt from American Water's June 30, 2006, capital
16 structure, the equity ratio would be 40.31 percent when assigning American Water's preferred
17 stock a 50 percent equity treatment value.

18 Q. If it appears that American Water's capital structure with the preferred stock
19 included would not be considered more leveraged than American Water's capital structure if
20 it had 10 percent more common equity rather than 20 percent preferred stock, why is capital
21 structure such an important issue in this case?

22 A. Because the preferred stock carries a cost that I believe is consistent with the
23 current lower cost-of-capital environment. Although this preferred stock was issued during

1 the first half of 2003, I believe the cost of capital was somewhat consistent at that time with
2 the current cost-of-capital levels. Consequently, because the cost of preferred stock is more
3 tangible than that of common equity, it is much more difficult to argue that this cost needs to
4 be higher in order to recover the cost of this capital. Because estimating the cost of common
5 equity is not as tangible as debt and preferred capital costs, this tends to be the capital
6 component in which companies can boost their revenue requirement by asking for a higher
7 cost of equity than that which is implied by utility companies' stock prices.

8 Q. Please explain further.

9 A. If I had recommended a cost of common equity in the 7 to 8 percent range
10 using MAWC's capital structure, then my overall ROR would have been much lower than
11 MAWC's requested ROR in this proceeding. Consequently, while the focus in a capital
12 structure discussion may be whether it is appropriate to include certain capital components in
13 the capital structure, one must not lose sight of the fact that it is the overall ROR that drives
14 the amount of revenue needed to service the various capital components in the capital
15 structure. If RWE only requires a 5.90 percent return for its investment in American Water's
16 preferred stock, then one would expect that its required ROE will not be much higher,
17 especially considering that many investors view utility common stock investments as quasi
18 debt investments, let alone quasi preferred stock investments.

19 Q. Are you aware of any evidence that would support a lower overall ROR
20 regardless of the capital components used in the capital structure?

21 A. Yes. In response to Staff Data Request No. 100.1, MAWC provided certain
22 valuation analyses performed by ** _____
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Rebuttal Testimony of
David Murray

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12 Q. ** _____
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Rebuttal Testimony of
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7 Q. ** _____

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17 Q. ** _____

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Rebuttal Testimony of
David Murray

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3 Q. ** _____

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13 Q. Are there reasons other than American Water's consolidation of financing
14 procurement that provide support for the use of American Water's consolidated capital
15 structure rather than MAWC's capital structure to determine a fair and reasonable ROR?

16 A. Yes. As discovered by Staff in MAWC's last rate case, Case
17 No. WR-2003-0500, American Water had used debt at the holding company level to make
18 equity infusions at the subsidiary level. This situation is often characterized as double
19 leverage because the consolidated company not only carries debt at the subsidiary level, but it
20 also carries debt at the holding company level to provide "equity" to the subsidiaries.
21 Because the revenue requirement may be higher because of a higher amount of common
22 equity in the capital structure caused by the use of double leverage, it is important for
23 regulators to address this situation when determining an appropriate revenue requirement.

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Rebuttal Testimony of
David Murray

1 | Because the consolidated capital structure is that which is evaluated by investors when
2 | providing American Water with debt and equity capital, I believe this capital structure is the
3 | most appropriate for ratemaking purposes in this case.

4 | Q. Please provide the relevant information from the last rate case which you relied
5 | upon to support your claim that American Water employs double leverage.

6 | A. The following exchange occurred in the September 10, 2003, interview
7 | conducted by Staff in MAWC's last rate case (p. 35, l. 11 – p. 36, l. 15):

8 | Mr. Murray:

9 | Q. Why wouldn't you -- if your six subsidiaries, why wouldn't
10 | you have the debt put through to them in order to make the
11 | acquisition, if American Water owns those subsidiaries, then
12 | what's -- what does it matter whether or not American Water
13 | has the 450 million and the subsidiaries have the rest or
14 | American Water had all of it or the subsidiaries had all of it?

15 | Mr. Hartnett:

16 | A. The subsidiaries will look to Capital Corp. for their debt
17 | source of capital and will look to American Water Works
18 | Company for any equity needs they may have. So American
19 | Water Works Company has to look for its own source of
20 | capital, whether it be internally generated capital or external
21 | capital. So the subsidiaries could not necessarily carry all the
22 | debt in some of those states to enable that purchase of that -- of
23 | those water assets in those states.

24 | Mr. Murray:

25 | Q. So some of that 450 million that's held in American
26 | Water may be used as an equity infusion for the acquisition of
27 | Citizens?

28 | Mr. Hartnett:

29 | A. Yes, that's true. American water uses whatever source it
30 | can for capital, whether it's borrowing or accessing the equity
31 | markets.

1 Q. Is this type of financing scenario something that had occurred more often with
2 water utilities rather than electric and gas utilities?

3 A. Yes. At least as far as electric and gas utility companies that were subject to
4 the Public Utility Holding Company Act (PUHCA) were concerned. According to Roger A.
5 Morin's book, *Regulatory Finance: Utilities' Cost of Capital*, 1994, PUHCA had limited the
6 amount of borrowing that companies subject to PUHCA could undertake. However, with the
7 repeal of PUHCA, this situation may change.

8 Q. What other reasons do you believe support the use of American Water's
9 consolidated capital structure rather than MAWC's capital structure?

10 A. American Water's operations are largely confined to regulated water utility
11 operations. American Water's 2005 audited financial statements indicate that non-utility net
12 property plant and equipment only make up 1.18 percent of total net property, plant and
13 equipment. Additionally, it appears that S&P is giving the most weight to American Water's
14 regulated utility operations when assigning it a business risk profile of "2". If S&P believed
15 that American Water had a significant amount of non-regulated operations, then it would most
16 likely assign American Water a higher business risk profile.

17 Q. Even if American Water had significant non-regulated operations, what would
18 most likely be the impact on the capital structure to offset the higher business risk that is
19 usually associated with non-regulated operations?

20 A. It would require American Water to carry more equity on a consolidated basis
21 in order to maintain its credit rating as opposed to if American Water's operations were
22 strictly confined to regulated water utility operations. If American Water has higher-risk,
23 non-regulated business ventures, then commonly understood financial theory dictates the need

Rebuttal Testimony of
David Murray

1 for more common equity in order to maintain a certain credit rating versus a company that
2 does not have higher-risk, non-regulated business ventures. Therefore, utilizing American
3 Water's consolidated capital structure for ratemaking purposes in this case is appropriate
4 because even though American Water's non-regulated operations are limited, the inclusion of
5 these non-regulated operations would require American Water to maintain a higher level of
6 common equity than if American Water's operations were confined to regulated water utility
7 operations.

8 Q. Does Ms. Ahern agree with you that the existence of non-regulated operations
9 increases the business risk of a regulated utility, and therefore, would require additional
10 common equity to lower the financial risk to offset the increased business risk?

11 A. No. On page 15, lines 6 through 8 of her Direct Testimony, Ms. Ahern states
12 the following:

13 Utilities formally were considered to have much less business
14 risk vis-à-vis unregulated enterprises, and, as a result a larger
15 percentage of debt capital was acceptable to investors.

16 This is completely inconsistent with most risk analyses I have reviewed in which the
17 risks of non-regulated operations are compared with the risk of regulated utility operations.
18 Although Ms. Ahern appears to be making a generalized statement in her testimony, it is the
19 risks specific to MAWC's regulated water utility operations that are important in this case. In
20 a May 31, 2006, S&P research report on American Water, S&P made the following statement:

21 American Water's stand-alone credit quality is supported by
22 its '2' (excellent) business risk profile. (Utility business risk
23 profiles are categorized from '1' (excellent) to '10'
24 (vulnerable)). The company's business risk profile benefits
25 from geographic and regulatory diversity, a large customer
26 base that is mostly residential and commercial, and a
27 generally supportive regulatory environment. **These**
28 **strengths are slightly offset by the somewhat increased**

1 **risk from American Water's nonregulated water and**
2 **wastewater operations. (emphasis added)**

3 Consequently, at least in the case of American Water, an investor publication does not
4 agree with the statement made by Ms. Ahern.

5 **MS. AHERN'S RECOMMENDED COST OF COMMON EQUITY FOR MAWC**

6 Q. Please summarize Ms. Ahern's recommended cost of common equity for
7 MAWC.

8 A. Ms. Ahern utilized the Discounted Cash Flow (DCF) model, the Capital Asset
9 Pricing Model (CAPM), the Risk Premium Model (RPM), and the Comparable Earnings
10 Model (CEM) to estimate the cost of common equity for MAWC. Ms. Ahern applied the
11 DCF, CAPM and RPM to two proxy groups. Ms. Ahern applied the CEM to two proxy
12 groups of non-price regulated companies. Ms. Ahern selected each non-price regulated proxy
13 group with the intent of making these groups comparable to her utility proxy groups.
14 Ms. Ahern summarizes her results on pages 4 through 6 of her Direct Testimony. The results
15 range from a low of 10.3 percent utilizing the DCF model to a high of 14.0 percent using the
16 CEM. After reviewing these results and making a business risk adjustment, Ms. Ahern
17 arrived at a range of recommended cost of common equity of 11.025 percent to
18 11.575 percent.

19 Q. On page 11, line 30 through page 14, line 23, of her Direct Testimony,
20 Ms. Ahern explains why she believes a small size risk adjustment needs to be made to her
21 initial proxy group cost of common equity. What has been Staff's position in the past
22 regarding the need for an adjustment to the cost of common equity to consider a utility
23 company's smaller size relative to the proxy group?

Rebuttal Testimony of
David Murray

1 Q. On page 22, line 14 through page 26, line 18 of her Direct Testimony,
2 Ms. Ahern explains why she believes it is better to rely on more than one cost of common
3 equity model to estimate the cost of common equity. She also implies that it is improper to
4 give primary reliance to the DCF model. How do you respond?

5 A. I believe it is important to consider other available financial information to test
6 the reasonableness of a recommendation regardless of the model or models used. I believe
7 one can do this by evaluating expected returns in the market and comparing this to the results
8 obtained from performing a cost of common equity analysis. For example, in my Direct
9 Testimony, I compared my recommendation to American Water's expected pension returns
10 and found that my recommended cost of common equity relying primarily on the DCF model
11 was quite reasonable.

12 Also, it is important to note that a proper DCF analysis will take into account the
13 average of all discount rates (whether determined by the CAPM or some other model)
14 investors have used to determine a fair price for the stock. Therefore, a proper application of
15 the DCF indirectly incorporates investors' use of all models for discount rate estimation.

16 Q. Beginning on page 26, line 23 through page 33, line 3 of her Direct Testimony,
17 Ms. Ahern explains why she believes an unadjusted DCF cost of common equity estimate
18 would understate the cost of common equity when market-to-book ratios are above one
19 because the cost of common equity is applied to book value rate base. Do you agree that the
20 DCF needs to be adjusted to consider this?

21 A. No. Investors are completely aware that the ROE is applied to book value rate
22 base to determine the revenue requirement for a given utility. Therefore, a proper application
23 of the DCF model already contemplates this fact because the price of the utility's common

Rebuttal Testimony of
David Murray

1 stock will capture any increased required return investors perceive that they need based on
2 their knowledge of the ratemaking process. Consequently, Staff's unadjusted DCF cost of
3 common equity estimate already considers investors' perceptions of the regulatory process
4 and should be used for purposes of setting rates for MAWC.

5 Q. Do you have any concerns with Ms. Ahern's analysis using the Risk Premium
6 Model (RPM)?

7 A. Yes. I believe it is more appropriate to use a recent average yield on utility
8 bonds with a credit rating of "A" as the starting point in her risk premium analysis because
9 there have been many predictions of increases in long-term interest rates by economists in the
10 recent past that haven't come to fruition. However, because interest rates have increased
11 recently, Ms. Ahern's use of a 6.3 percent bond yield is not extremely overstated when
12 comparing it to the 5.97 average "A" rated public utility bond yield for April 2007. I believe
13 current yields should also be used in the CAPM. Because investors can easily observe current
14 bond yields and apply their current required equity risk premiums to these yields, using
15 current yields allows for a more reliable measure of the current cost of common equity.
16 While it is possible that long-term interest rates may increase in the future, it is also possible
17 that they will decrease. If MAWC's cost of capital should increase dramatically because of
18 an increase in long-term interest rates, then it can file a rate case and have all of its revenues,
19 expenses, and rate base data reviewed at that time.

20 Q. Why is it logical to use current yields when estimating the cost of common
21 equity using the RPM or the CAPM?

22 A. It is logical to use current yields for the same reason it is logical to use current
23 stock prices in the DCF model. As with current stock prices, current yields reflect investors'

Rebuttal Testimony of
David Murray

1 required rates of return for future uncertainties. If I require a yield of 6 percent on my
2 investment in a bond today, I have done so based on my assessment of not only company-
3 specific factors, such as credit risk, but also understanding the possibility of interest rate
4 increases and decreases in the future. In applying the DCF model, it would not be appropriate
5 to use some future estimate of what the stock price may be a year or so into the future to
6 determine the current cost of common equity. Consequently, it is most appropriate to use
7 current yields for RPM and CAPM analyses.

8 Q. Do you have any concerns with Ms. Ahern's risk premium estimate using
9 historical data?

10 A. Yes. I do not agree with Ms. Ahern's position that arithmetic means should be
11 used when estimating the risk premium going forward. For the most part, it is assumed that
12 investors in utility stocks are buying for the long-term. Investors are not buying and selling
13 shares every year. Consequently, the investor should not be assumed to be realizing any of
14 the gains and losses that occur year-to-year.

15 Q. Please provide a simple example to illustrate why you don't believe investors
16 use arithmetic means when determining the amount of risk premium they will require on a
17 given stock or a portfolio of stocks.

18 A. Suppose that an investor makes a \$1 stock investment over a three-year period.
19 If an investor pays \$1 for a stock in year 1 and in year 2 the stock increases to \$1.50, then the
20 investor would have a 50 percent growth rate. In year three, the price of the stock decreases
21 by 50 percent to \$.75. If an investor performed a simple arithmetic average of these two
22 returns, then he would think that he received 0 percent $[(50 \text{ percent} + -50 \text{ percent})/2]$ growth
23 in his investment over the three-year period. However, in reality the investor actually had a

Rebuttal Testimony of
David Murray

1 25 percent decline in his investment over this three-year period. This is why using the
2 arithmetic mean to measure risk premiums is questionable.

3 Q. You have given an intuitive reason as to why you believe that geometric means
4 are more realistic in measuring equity risk premiums, but Ms. Ahern cited Ibbotson
5 Associates to support her claim that the arithmetic average should be used. Do you have any
6 academic support for your use of the geometric mean?

7 A. Yes. The first is *Investment Analysis & Portfolio Management*, seventh
8 edition, 2003, written by Frank K. Reilly and Keith C. Brown. Reilly and Brown stated the
9 following:

10 The geometric mean is appropriate for long-run asset class
11 comparisons, whereas the arithmetic mean is what you would use to
12 estimate the premium for a given year (e.g. the *expected* performance
13 next year).

14 The second textbook is *INVESTMENT VALUATION: Tools and Techniques for*
15 *Determining the Value of Any Asset*, 1996, written by Aswath Damodaran. Dr. Damodaran
16 stated the following in his textbook:

17 The geometric mean generally yields lower premium estimates
18 than the arithmetic mean. In the context of valuation, where cash
19 flows over a long time horizon are discounted back to the present,
20 the geometric mean provides a better estimate of the risk premium.
21 Thus, the premium of 5.50% (the geometric mean of the premium
22 over Treasury bonds) is used throughout this book for calculating
23 expected returns.

24 The third textbook is *Analysis of Equity Investments: Valuation*, 2002, written by
25 John D. Stowe, Thomas R. Robinson, Jerald E. Pinto and Dennis W. McLeavey. The text
26 states the following:

27 In taking a historical approach, we face a choice between using
28 arithmetic mean return (typically, the average of one-year rates of
29 return) and using the geometric mean return (the compound rate of
30 growth of the index over the study period). The arithmetic mean

1 more accurately measures average one-period returns; the
2 geometric mean more accurately measures multiperiod growth.
3 The dilemma is that the CAPM (as well as the APT) is a single-
4 period model, suggesting the use of the arithmetic mean; but
5 common stock investment often has a long time horizon, and
6 valuation involves discounting cash flows over many periods,
7 suggesting the use of geometric mean...

8 ...Although the debate is inconclusive, this book uses geometric
9 means, not only for the previously given reasons but also because
10 geometric means produce estimates of the equity risk premium that
11 are more consistent with the predictions of economic theory.

12 The above-mentioned textbooks were used in the Chartered Financial Analyst (CFA)
13 Program sponsored by the CFA Institute. Many individuals that are pursuing their CFA
14 designation may either work in the investment field or intend to work in the investment field.
15 If these individuals employ a risk premium estimate as used in these textbooks, their valuation
16 analysis will be based in part on historical geometric average risk premiums.

17 Q. Do you have concerns with Ms. Ahern's CAPM analysis?

18 A. Yes. My concerns about her CAPM analysis are much the same as my
19 concerns about her risk premium analysis because of her use of arithmetic averages.
20 Therefore, I will not go into the detail that I did in my discussion about her risk premium
21 analysis.

22 Q. What concerns about her CAPM analysis are different than that of her risk
23 premium analysis?

24 A. Ms. Ahern chose to use only the income return on long-term U.S. Government
25 Securities when calculating an historical earned risk premium difference between equities and
26 risk-free securities. However, an investor will receive only the income return if he holds the
27 bond until maturity. Otherwise investors will receive a total return, which is based on
28 changes in the price of the bond and reinvestment returns. Therefore, if one is going to use

1 earned return spreads to estimate forward-looking risk premiums, it is appropriate to measure
2 the market risk premium by comparing total returns on stocks to total returns on risk-free
3 treasuries because this is what investors will expect to receive.

4 Q. Ms. Ahern uses a form of the CAPM characterized as the Empirical Capital
5 Asset Pricing Model (ECAPM). Is the use of the ECAPM widely discussed in financial texts?

6 A. Not to my knowledge. For example, the textbook by Aswath Damodaran,
7 *INVESTMENT VALUATION: Tools and Techniques for Determining the Value of Any Asset*,
8 1996, does not recommend an adjustment to beta for the CAPM. This textbook follows the
9 traditional execution of the CAPM throughout the text.

10 Q. Does the Comparable Earnings Model (CEM) analysis performed by
11 Ms. Ahern necessarily reflect the cost of common equity capital to the companies in her
12 study?

13 A. No. The use of the CEM is an analysis of past actual returns or future expected
14 ROE. In the case of Ms. Ahern's analysis, she uses both past and expected returns. First,
15 there is an inherent problem with using expected returns on common equity from Value Line
16 because while investors use Value Line to evaluate their investment opportunities, Value
17 Line's predictions may not be consistent with that of investors. Second, past and expected
18 returns are not necessarily synonymous with the cost of common equity; i.e., required ROE.

19 If the allowed returns are set based on past and expected returns, then it is possible that
20 these returns will remain above the cost of capital. This results in providing support for
21 current market valuation levels rather than setting the ROE equivalent or close to the cost of
22 common equity. If a company is earning more than its cost of capital, then the company is
23 recovering more than its cost of service. The intent of ROR/rate base regulation is to allow

Rebuttal Testimony of
David Murray

1 | the utility to recover its cost of service. While reviewing what other companies may be
2 | earning or expected to earn may be informative in testing the reasonableness of a witness's
3 | DCF results, it should not be relied upon for a cost of common equity recommendation
4 | because of the above explanation.

5 | Q. Have any other commissions rejected the CEM for basically the same reason
6 | that you cited above?

7 | A. Yes. In a case involving AmerenUE, Docket Nos. 02-0798, 03-0008 and
8 | 03-0009, the Illinois Commerce Commission stated the following:

9 | Staff objects to Ameren's comparable earnings analysis
10 | because Staff believes the comparable earnings
11 | methodology is based on the erroneous assumption that
12 | earned returns on book equity are acceptable substitutes for
13 | investor-required returns. Staff claims there is no basis for
14 | this implication, since investor-required returns are only
15 | loosely related to accounting returns; they are not
16 | interchangeable. Staff asserts that the return on book value
17 | of common equity is unaffected by changes in the investor-
18 | required rate of return. Staff claims that in some
19 | circumstances investors could bid up the price of a stock,
20 | thereby reducing the implied required rate of return, but the
21 | anticipated return on book equity would not change.

22 | As Staff notes, the Commission has consistently and
23 | repeatedly rejected the comparable earnings methodology.
24 | In the Commission's view, Ameren has provided no new
25 | argument in favor of this flawed methodology. Stated
26 | simply, the Commission does not believe it is appropriate
27 | to estimate CIPS' and UE's forward looking cost of
28 | common equity by looking to historical earned returns on
29 | common equity earned by competitive industrial firms of
30 | similar risk. The constantly changing economic
31 | environment alone, which is well documented in the record,
32 | prevents the Commission from relying on historical earned
33 | returns to establish a forward looking return on common
34 | equity.

35 | As stated above, the objective of this proceeding is to
36 | establish a net original cost rate base and provide common
37 | equity investors the opportunity to earn the market required

1 rate of return on the proportion of net original cost rate base
2 financed by common equity investors. The comparable
3 earnings test proposed by Ameren is inconsistent with this
4 object[ive] and is rejected.

5 Q. Is there any other logical reason to dismiss the estimated cost of common
6 equity using the CEM?

7 A. Yes. A review of page 2 of Ms. Ahern's Schedule PMA-1 attached to her
8 direct testimony shows that she averaged lines 1 through 4 to arrive at her estimated cost of
9 common equity of 10.95 for her proxy group of six AUS Utility Reports water companies and
10 11.50 percent for her proxy group of four Value Line water companies. Ms. Ahern's CEM is
11 the only model that shows an estimated cost of common equity that is not in the 10 percent
12 range. Because of the large difference between this model compared to the other three
13 models, she should have dismissed the results rather than giving them 25 percent weight.

14 **MR. GORMAN'S RECOMMENDED COST OF COMMON EQUITY FOR MAWC**

15 Q. Please summarize Mr. Gorman's recommended cost of common equity for
16 MAWC.

17 A. Mr. Gorman recommends a return on common equity of 9.70 percent and an
18 overall ROR of 7.77 percent for MAWC based on the subsidiary capital structure of MAWC.
19 Mr. Gorman's recommended cost of common equity is based on a range of cost of common
20 equity estimates of 9.20 percent based on his constant growth and two-stage DCF analyses
21 and 10.10 percent based on an average of his risk premium and CAPM analyses.
22 Mr. Gorman's recommended cost of common equity of 9.70 percent is approximately the
23 midpoint of this range.

Rebuttal Testimony of
David Murray

1 Q. Mr. Gorman's recommended cost of common equity is higher than your
2 recommended cost of common equity by 60 basis points. What is your understanding for the
3 main differences in your recommendations?

4 A. It appears that the main reason for the difference is his reliance on the results
5 he achieves using the risk premium and CAPM models. Therefore, I will concentrate on his
6 analyses using these two models to show why I believe he arrives at higher cost of common
7 equity results using these two models.

8 Q. Mr. Gorman's estimates a cost of common equity of 9.6 percent to
9 10.1 percent using a "bond-yield plus risk premium" model. Are Mr. Gorman's estimates
10 consistent with some basic rules of thumb when adding a general risk premium to American
11 Water's current cost of debt?

12 A. No. AWCC recently issued \$237,700,000 of 15-year debt on December 31,
13 2006, which carries a coupon of 5.77 percent. Because this is the most recent longer-term
14 maturity debt issuance, I believe this provides a good proxy of American Water's current cost
15 of debt; i.e. current yield-to-maturity. According to the textbook *Analysis of Equity*
16 *Investments: Valuation* (2002) by John D. Stowe, Thomas R. Robinson, Jerald E. Pinto and
17 Dennis W. McLeavey, a typical risk premium added to the yield-to-maturity (YTM) of a
18 company's long-term debt is in the 3 to 4 percent range. It is important to note that the YTM
19 is based on a company's current cost of debt, not an historical cost of debt. This is why I am
20 using the coupon on recent debt issued by AWCC rather than historical debt issuances.
21 Because utility stocks behave much like bonds, I wouldn't add more than a 3 percent risk
22 premium to arrive at a rough estimate of the cost of common equity. This would result in an
23 8.77 percent cost of common equity for MAWC using the bond-yield plus risk premium

1 approach. A more general approach would be to add this risk premium to the recent average
2 "A" rated public utility bond yield, which was 5.97 percent as of May 2007. This results in an
3 estimated cost of common equity of 8.97 percent.

4 Q. How did Mr. Gorman approach estimating the equity risk premium?

5 A. Mr. Gorman analyzed the differences between average authorized gas utility
6 common equity returns to both U.S. Treasury bond returns and Moody's utility bond yields
7 for the period 1986 through 2006. He then added these differences to projected yields on
8 long-term U.S. Treasury bonds and "A" rated public utility bond yields. While I do not
9 believe it is appropriate to use projected yields for reasons I discussed when rebutting
10 Ms. Ahern, Mr. Gorman's projected yields are not much different than current yields because
11 of recent increases in interest rates.

12 Q. Why are Mr. Gorman's equity risk premium estimates higher than what you
13 believe to be appropriate?

14 A. Mr. Gorman uses authorized returns as an indicator of the market cost of
15 common equity. Risk premium analyses in traditional finance would not use allowed returns
16 on common equity as a variable. Traditional finance risk premium analysis measures either
17 implied required returns on common equity against expected bond returns or actual returns on
18 common equity against actual bond returns. Because commissions may not be willing to
19 authorize returns on common equity that are consistent with the current lower costs of
20 common equity, then this may result in a higher than appropriate equity risk premium.

21 Q. Why do you believe Mr. Gorman's CAPM analysis results in higher estimates
22 for the cost of common equity for utility companies?

Rebuttal Testimony of
David Murray

1 A. Primary drivers of Mr. Gorman's higher CAPM results are his use of historical
2 realized returns for the period 1926 through 2006 to predict future expected returns and his
3 use of arithmetic averages rather than geometric averages.

4 The use of historical realized returns was questioned recently by two of the most
5 prominent individuals in the field of finance. Eugene F. Fama and Kenneth R. French
6 (Fama and French) article, "The Equity Premium" published in the *Journal of Finance* in
7 April 2002. I discussed this article in my Direct Testimony starting on page 26, line 19
8 through page 28, line 5. The article's main point was that the performance of equities during
9 the period 1951 to 2000 exceeded the returns required by investors to the point that using
10 historical data with this period included may result in a higher than appropriate estimate of the
11 equity risk premium.

12 Compounding the problem of Mr. Gorman's use of historical realized returns to
13 estimate the future equity risk premium is his complete reliance on arithmetic averages of
14 these historical earned return differences. I provided support for why I believe it is more
15 appropriate to use geometric averages in this testimony when addressing Ms. Ahern's use of
16 arithmetic averages.

17 **SUMMARY AND CONCLUSIONS**

18 Q. Please summarize the conclusions of your rebuttal testimony.

19 A. My conclusions regarding the capital structure and cost of common equity are
20 listed below:

- 21 1. The use of MAWC's capital structure as proposed by MIEC and
22 MAWC is inappropriate. It does not reflect American Water's actual
23 support of the capital of its subsidiary, MAWC. The calculation of the

Rebuttal Testimony of
David Murray

1 | cost of capital for MAWC should be based on American Water's actual
2 | consolidated capital structure as of June 30, 2006;

3 | 2. My cost of common equity recommendation of 8.60 percent to
4 | 9.60 percent, would produce a fair and reasonable ROR of 6.27 percent
5 | to 6.55 percent for the Missouri jurisdictional water utility rate base for
6 | MAWC.

7 | Q. Does this conclude your rebuttal testimony?

8 | A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Missouri-American Water)
Company's request for Authority to) Case No. WR-2007-0216
Implement a General Rate Increase for)
Water Service provided in Missouri)
Service Areas)

AFFIDAVIT OF DAVID MURRAY

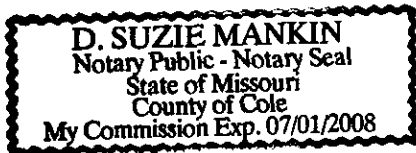
STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

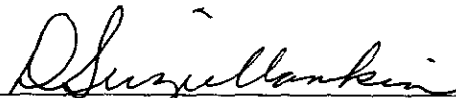
David Murray, being of lawful age, on his oath states: that he has participated in the preparation of the following Rebuttal Testimony in question and answer form, consisting of 31 pages to be presented in the above case; that the answers in the following Rebuttal Testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true and correct to the best of his knowledge and belief.



David Murray

Subscribed and sworn to before me this 9th day of July, 2007.





Notary Public

SCHEDULE 1 and 2

HAS BEEN DEEMED

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